A STUDY ON
AZHAL KEEL VAYU
(Osteoarthritis)

Dissertation Submitted To
THE TAMIL NADU Dr. M.G.R. Medical University
Chennai – 32

For the Partial fulfillment for the Award of Degree of

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(Branch – III, SIRAPPU MARUTHUVAM)

DEPARTMENT OF SIRAPPU MARUTHUVAM

Government Siddha Medical College

Palayamkottai – 627 002.

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PALAYAMKOTTAI, TIRUNELVELI-627002,
TAMILNADU, INDIA.

Phone: 0462-2572736 / 2572737/ Fax:0462-2582010
Email: gsmc.palayamkottai@gmail.com

BONAFIDE CERTIFICATE

This is to certify that the dissertation entitled **"A STUDY ON AZHAL KEEL VAYU** is a bonafide work done by **DR. M. NASIYA BANU, GOVERNMENT SIDDHA MEDICAL COLLEGE, PALAYAMKOTTAI** in partial fulfillment of the University rules and regulations for award of **M.D (SIDDHA), BRANCH - III SIRAPPU MARUTHUVAM** under my guidance and supervision during the academic year **2015-2018 OCTOBER.**

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TAMILNADU, INDIA.

Phone: 0462-2572736 / 2572737/ Fax:0462-2582010
Email: gsmc.palayamkottai@gmail.com

DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled **"A STUDY ON AZHAL KEEL VAYU"** is a bonafide and genuine research work carried out by me under the guidance of **Dr. M.AHAMED MOHIDEEN, M.D(s).,** Associate Professor, PG- III, Department of Sirappu Maruthuvam, Govt. Siddha Medical College, Palayamkottai and the dissertation has formed the basis for the award of any Degree, Diploma, Fellowship or other similar title.

Date :

Place: Signature of Candidate

Dr. M. Nasiya Banu

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PALAYAMKOTTAI-627002

TAMILNADU,INDIA

Ph: 0462-2572736/2572737/fax:0462-2582010

Email id :gsmc.palayamkottai@gmail.com

CERTIFICATE OF GUNAPADAM AUTHENTICITY

Certified the following metals and mineral drugs used in siddha formulation **PANJA LAVANA PARPAM (INTERNAL)** for management of **AZHAL KEEL VAYU(OSTEO ARTHRITIS)** taken up for post-graduation dissertation studies by **Dr.M.NASIYA BANU M.D (S). , (REG.NO:321513007)** PG scholar, department of sirappu maruthuvam are correctly identified and authenticated through Visual inspection / Organoleptic characters / Experience, Education & Training morphology, microscopical and taxonomical methods.

METALS AND MINERAL INGREDIENTS OF PANJA LAVANA PARPAM

S.NO	TAMIL NAME	ENGLISH NAME
1.	Kariuppu	Table salt
2.	Indhuppu	Rock salt
3.	Kaluppu	Himalayan Crystal salt
4.	Valayaluppu	Selvitri, Glass gall
5.	Vediuppu	Salt petre

Station: PALAYAMKOTTAI

Date: 14.06.17

Authorized signature 14/6/17

Dr. A. KINGSLY MD (S)
Reader
Head of the Department
PG Gunapadam
Govt. Siddha Medical College
Palayamkottai.

GOVERNMENT SIDDHA MEDICAL COLLEGE

PALAYAMKOTTAI-627002

TAMILNADU,INDIA

Ph: 0462-2572736/2572737/fax:0462-2582010

Email id :gsmc.palayamkottai@gmail.com

CERTIFICATE OF BOTANICAL AUTHENTICITY

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INGREDIENTS OF LAHU VATHA KESARI THYLAM

S.NO	DRUGS	BOTANICAL NAME	FAMILY	PART USED
1.	Pirandai	Cissus quadrangularis	Vitaceae	Stem Juice
2.	Murungai	Moringa oleifera	Moringaceae	Bark Juice
3.	Kuppaimeni	Acalypha indica	Euphorbiaceae	Whole plant Juice
4.	Nochi	Vitex negundo	Verbenaceae	Leaf Juice
5.	Kumari	Aloe vera	Liliaceae	Juice

INGREDIENTS OF LAHU VATHA KESARI THYLAM

S.NO	DRUGS	BOTANICAL NAME	FAMILY	PART USED
1	Nallvelai	Cleome viscosa	Capparidaceae	Leaf Juice
2	Vellai poondu	Allium sativum	Liliaceae	Bulb
3	Perungayam	Ferula assafoetida	Apiaceae	Dried latex(gum oleo resin)
4	Moosambaram	Aloe littoralis	Liliaceae	Dried latex

Station:

Date:

Authorized signature

Dr. S. SUTHA, M.Sc.,M.Ed.,Ph.D.,
Associate Professor
Dept. of Medicinal Botany
Govt. Siddha Medical College
Palayamkottai, Tirunelveli - 2.

INSTITUTIONAL ETHICAL COMMITTEE
GOVERNMENT SIDDHA MEDICAL COLLEGE, PALAYAMKOTTAI
TIRUNELVELI – 627 002
TAMIL NADU INDIA

Ph : 0462-2572736 / 2572737 / 2582010 Fax : 0462-2582010
Email ID : gsmc.palayamkottai@gmail.com

F.No.GSMC / 5676 / P&D / Res / IEC / 2014 **Date : 20.07.2016**

CERTIFICATE OF APPROVAL

Address of Ethical committee	Government Siddha Medical College Palayamkottai – 627002 Tirunelveli District
Principal investigator	Dr.M.Nasiya banu. I Year, PG Dept of Sirappu Maruthuvam Reg.No :
Guide	Dr.M.Ahamed mohideen.M.D(s) Reader Dept of sirappu maruthuvam
Dissertation topic	An open clinical Study to evaluate the clinical efficacy of siddha sasthric formulation "**PANJALAVANAPARPAM**"(Internal)"LAHU VATHA KESARI THYLAM "for the treatment of **AZHAL KEEL VAYU.**
Document field	1. Protocol2. Date Collection Form 3. Patient Information Sheet 4. Consent form5. SAE (Pharmacovigilance)
Clinical / Non Clinical trial Protocol	Clinical trial protocol – Yes
Informed consent document	Yes
Any other document	Case sheet, Investigation document
Date of IEC approval & it's Number	GSMC/3.IEC/2016/III-26/20.07.16

We approve the trial to be conducted in its presented form.

The Institutional Ethical committee expects to be informed about the process report to be submitted to the IEC at least annually of the study, any SAE occurring in the course of the study and changes in the protocol and submission of final report.

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IAEC APPROVAL CERTIFICATE

This is to certify that the project **Evaluation of Anti-inflammatory, Analgesic And Toxicological Profile of Panjalavana Parpam** has been approved by the IAEC, KMCH College of Pharmacy, Coimbatore.

Reg. No: 685/ PO/ Re/ S/ 2002 / CPCSEA Dated: 21st August 2002. IAEC No: **KMCRET/ M.D./S /07/2018-19.**

A. Rajasekaran

Dr. A. Rajasekaran
Biological Scientist and IAEC Chairperson
PRINCIPAL
KMCH College of Pharmacy,
Kovai Estate, Kalapatti Road.
Coimbatore - 641 048.
Tamil Nadu, INDIA

KMCH College of Pharmacy * Coimbatore - 641 035 *

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The Tamil Nadu Dr.M.G.R.Medical University

69, Anna Salai, Guindy, Chennai - 600 032.

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1,2PG student , Department of PG Sirappu Maruthuvam, Government Siddha Medical College, Palayamkottai

3Professior & HOD, Department of PG Sirappu Maruthuvam , Government Siddha Medical College, Palayamkottai

4.Associate Professor, Department of PG Sirappu Maruthuvam , Government Siddha Medical College, Palayamkottai

5. Grade II Lecturer, Department of PG Sirappu maruthuvam, Government Siddha Medical College, Palayamkottai

***Corresponding author**: Dr. Shanmugapriya M ,

PG student , Department of PG Sirappu Maruthuvam , Government Siddha Medical College , Palayamkottai. E-mail: priyasrima178@gmail.com

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Dr.Ahamed Mohideen M [4] , Dr. Sujatha S [5],

[1],[2]PG student , Department of PG Sirappu Maruthuvam, Government Siddha Medical College, Palayamkottai

[3]Professior & HOD , Department of PG Sirappu maruthuvam, Government Siddha Medical College, Palayamkottai

[4]Associate Professor, Department of PG Sirappu Maruthuvam, Government Siddha Medical College, Palayamkotta

[5]Grade II Lecturar , Department of PG sirappu maruthuvam, Government Siddha Medical College, Palayamkottai

***Corresponding author**: Dr. Nasiya Banu., PG student, Department of PG Sirappu Maruthuvam , Government Siddha Medical College, Palayamkottai

E-mail: *drnasiyaimthiyas@gmail.com*

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INTRODUCTION

Siddha system is a very ancient Medicine in the world.It is mainly occur in South India. Siddhars are the Indian saint in the World. They are used the Herbs, Metals, Minenals.It's used for Better health and helps to live the mankind for more than Thousand of Years .Siddha Medicine is a preciousless medicine in the world.

According to Siddha physiology man is considered as the "MICROCOSM".Universe is considered as the "MACROCOSM". It shows the Human body is the replica of the Universe.

Siddha System of medicine is to give healthiness to an individual.Siddha system is differ from the other system medicine by giving absolute Physical, mental and social well being of an individual.

Siddhars advised to use herbal medicine initially to cure diseases.Siddhars are most beneficial Scientists,

In the world.The only difference appears to be that the Siddha medicine recognizes predominance of Vadham ,Pitham, Kabam.in childhood,adulthood and old age.According to the Siddha system of medicine, varios psychological and physiological functions of body are attributed to the combination of seven elements:

1.Ooneer(plasma)

2.Seneer(Blood)

3.Oon(Muscle)

4.Koluppu(Fatty tissue)

5.Enbu(Bone)

6.Enbu majjai(Bone Marrow)

7.Sukkilam /Suronitham(Reproductive organs).

According to the siddha medicine System ,diet and life style play an major role in health and curing diseses. This concept of this siddha medicine is termed as pathiyam and apathiyam,

which is essentially a list of ‘’do’s and don’ts’’.Siddhars Principle nature is man and man is nature.Man’s body is produced by nature. Which is a part of Universal nature.Man’s body is produced by nature but the power in nature is Spiritual.Therefore Spiritual is able to change a man’s nature response to nature call is liable to occur diseases.

The Uyir thathu divided in to three thodas known as Vatham, Pitham, Kabam and acquires 3 characters(Sathuvam, Thamo, Raso)thereby it protects and develops the Soul and body.

Saiva Siddhantam is basic for siddha .Mini of siddhars were devout saivaites .The Siddha medicines meant for the human body are prepared , based on the theory of Panchabuthas.

The Name Siddha medicines owes its origin to medicinal thoughts and practices of a classof Tamil sages called the Siddhas “ Perfected “ or “Holy immortals “ who were , and are still , thought to have superhuman powers. They had firm trust in the “deathless “ physical body being in harmony with the spiritual immortal “soul”.

Significantly , one of the definitions of siddha medicine is invasion of death : that which ensure preventive against mortality “,- **Tirumular**

In Siddha system of medicine knee joint pain is classified and described underkeel vayu.

The word keel means the hinge joint

The word vayu means the vali of vatham

Keel Vayu is classified as 10 is number . Azhal Keel Vayu is comes under this Classification .Azhal keel vayu is characterized by

Joint Pain

Swelling

Tenderness

Stiffness

Restricted movements

and therefore it can be correlated with osteoarthritis of knee.

Osteoarthritis:

Osteoarthritis is a chronic progressive degenerative disease affecting mainly the articular cartilage of big weight joints of the body mainly in the aged individuals that is characterized by

- Subchondral sclerosis
- Osteophyte formation
- Changes in the soft tissues including the synovial membrane joint capsule,ligaments and muscle,
- Synovial inflammation

Osteoarthritis figures as the second most common disease after diabetes.

Hence osteoarthritis represents a major root of disability.It is more common in post menopausal women.

As per Siddha literaturePanja Lavana parpam **(internal) Lahu vatha kesari thylam (External)** have been indicated for arthritis and myalgic pain. On the basis of our siddha text Osteoarthritis is intercorrelated with keelvayu and more often keelvayu comes under 80 types of vadha diseases.The above medicine contain ingredients which have anti inflammatory property.

PANJA LAVANA PARPAM**-** INTERNALLY

(Ref – ATHMARATCHAMIRTHAM)

LAHU VADHA KESARI THYLAM-EXTERNALLY

(ReF_.)ANUBAVA VAITHIYA DEVA RAGASIYAM.

The drugs were prepared by the author and tried in 40 cases in the OPD and IPD.

AIM AND OBJECTIVES

AIM:

Phase II clinical observation criteria based study of "AZHAL KEEL VAYU" and the drug choice "PANJA LAVANA PARPAM" (Internal) and "LAHU VATHA KESARI THYLAM"(External).

PRIMARY OBJECTIVE:

To evaluate the clinical efficiency of Siddha drugs "**PANJA LAVANA PARPAM"**(Internal) and **"LAHU VADHA KESARI THYLAM"**(External) in healing of "AZHAL KEEL VAYU" (OSTEOARTHIRITIS).

SECONDARY OBJECTIVE:

- To study the siddha principles neerkuri and neikuri before and after treatment.
- To study the effect of internal and external medicine with wash in 40 subjects.
- To evaluate the safety profile of the trial medicine.

  1.To evaluate the clinical cause of the disease Azhal keel vayu with keen study on the definition,Aetiology,Pathology, Diagnosis,Prognosis,Complications and the treatment by making apply of siddha aspects.

  2.To have an idea about the occurrence of Azhal keel vayu with orientation of Age,Sex, Family,History,Socio-economic status,Diet, Habit and climatic conditions.

  3.TO know the connection of aetiology, classification, Symptoms,diagnosis and line of treatment compared with osteo arthiritis.

4.To execute the variation of the disease under the topics of Mukkutram,Uyir Thathukkal,Udal thathukkal ,Envagai thervugal,Porigal,Naadi,Neerkuri,Neikuri.

5.To formulate a clinical trial medicine PANJA LAVANA PARPAM(Internal),LAHU VADHA KESARI THYLAM(External) in the treatment of Azhal keel vayu.

6.To apply the modern parameters in the analysis of X-ray to confirm the diagnosis and to follow the series of patients.

7.To bring out the biochemical analysis and pharmacological action of the trial medicine.

8.To insist Thokkanam and Otradam, Asanam exercise along with medicine to achieve the good results, Which are the prominent features of Sirappu Maruthuvam.

SIDDHA LITERATURE

Siddhars are most spiritual scientist in the world he explored.

The food we have take six types of taste.

1. Sweet (இனிப்பு)
2. Sour (புளிப்பு)
3. Salt (உப்பு)
4. Bitter (கைப்பு)
5. Pungent (கார்ப்பு)
6. Astringent (துவர்ப்பு)

Each of it mixture of 2 basic materials,

இனிப்பு	-	மண்	+	நீர்
புளிப்பு	-	மண்	+	தீ
உப்பு	-	நீர்	+	தீ
கைப்பு	-	காற்று	+	ஆகாயம்
கார்ப்பு	-	தீ	+	ஆகாயம்
துவர்ப்பு	-	மண்	+	ஆகாயம்

This six tastes are divided by the thiridhosam (vatham, pitham, kabam)

Which are the pillar for support our body structure.

வாயு	-	வாதம்
தேயு	-	பித்தம்
அப்பு	-	கபம்

These are the alteration method in the level of Thiridhosha. It may affects the normal function of the body.

மிகினும் குறையினும் நோய் செய்யும் நூலோர்
வளிமுதலா வெண்ணிய மூன்று
- திருக்குறள்

The normal value of thiridhosa vadham, pitham, kabam – 1: ½ : ¼

வழங்கிய வாதம் மாத்திரை யொன்றாகில்

தழங்கிய பித்தந் தன்னிலை வாசி

அழங்குங் கபந்தானடங்கியே காலோடில்

பிசங்கிய சீவர்க்குப் பிசகொன்றுமில்லையே

- குணவாகடம்

Synonyms of the literature, Three dhosas due to irregular diet & behavior. In the keel vatham disease, the chief deranged factor among the Thirithathu is the vatham.

கீல்வாயு

Introduction

கீல்வாயு என்பது மூட்டுகளைப் பற்றிய வாதம்.

In Siddha literature Azhal keel vayu comes in the topic of vatha disease.

Azhal keel vayu = Azhal + keel + Vayu

Azhal - Pitham

Keel - Joint

Vayu - Vatham

In Agasthiyar Gunavagadam "KEEL VAYU" comes under 80 types of vatha diseases.

"தானாக கீல்வாத ரோகம் பேரை

நோய் தனக்கு பாகியாய் வாதரோக மென்பர்

நுட்பமுள்ள வாதரோக மெண்பதுந் தான்

ஆய்ந்தெடுத்து இதற்குள்ளே அடக்கம் பாரு.

- அகத்தியர் குணவாகடம்

தேரையர் காப்பியத்தில் வாதம் 81 வகையில் கீல்வாதம் தொகுக்கப்பட்டுள்ளது.

யூகி வைத்திய சிந்தாமணியில் வாதம் 80 வகையாகவும்,

TV சாம்பசிவம்பிள்ளை நூலில் கீல்வாயு causes "Painful inflammation with swwelling affecting the muscle & joints of the human body.

நோய் இயல்

இதனை சபாபதி கையேட்டில்,

"வளியுமைந் தன்னிலை கெட்டு

வலியுடன் வீக்கச் சுரமும் காய்ந்து

மூட்டுக்கள் தோறும் முடுக்கியே நொற்று

மூட்டுக்கள் தன்னில் நீரும் சுரந்து

தாங்கொணா வலியுமா நொந்திடுமம்மே"

வேறுபெயர்கள்

சந்துவலி, மூட்டுவலி, மேகசூலை, முடக்குவாயு, ஆமவாதம், சந்துவாதம், சூலைக்கட்டு, சந்திக சிலேஷ்ம ரோகம், வாதசூலை, வாயுரோகம்

காரண பெயர்கள்

நோய்காரணம்	-	மேகசூலை
முக்குற்ற நிலை மாறுபாடு	-	வாதசூலை, சந்திக சிலேஷ்மரோகம், சந்துவாதம்
இடத்தைக் கொண்டு	-	மூட்டுவலி, சந்துவலி
குறிகுணங்களை கொண்டு	-	சூலை கட்டு, முடக்கு வாதம்

நோய் வரும் காரணங்கள் பற்றி பரராச சேகரத்தின்படி,

"காணவே மிகவுண்டாலுங் கருதுபட்டினி விட்டாலும்

மான்னையார் கண் மோகமறக்கினு மிகுந்திட்டாலும்

ஆணவ மலங்கடம்மை யங்கனே விடாததாலும்

வானுதன் மடநல் லாளே வாதங்கோ பிக்குங் கானே''

பயம், எல்லோரிடமும் கோபம் கொள்ளல், மிகுதியாக ஓடல், மிகுந்த துக்கம், தினமும் உடலின்மேல் காற்றுப்படல் போன்றவற்றாலும்,

''காலங்கண் மாறியுண்ணுங் காரியத் தாலுந் தண்ணீர்

சாலவே யருந்தினாலுந் சந்திலுட் கார்ந்தாலும்

கோலமாம் புளிப்பு நெய்யை வருந்தினாலும்

வால்வார் முலை நல்லாளே வாத முற்பவிக்குங் காணே''

- **பரராசசேகரம்**

''கூறுமொன்று மூன்றுடன் குலவு நாலைந் தேழிலும்

குற்றமாம் நலத்தினும் கொரம் பன்னிரண்டிலும்

சேரவே புதன்தாறுமோ சீரியமேனை நின்றிடில்

செப்பொணாத தீமையோடு செய்யும் பச்சந்தாறும்

நெடுந்துக்க மிக்கவாம் நடக்கற்தாது தொழில்தாம்

நித்தையாகு கீல்பிடிப்பு நீடு மெய்யில் தோன்றுமாம்

காரியங்கள் சேதமாய் கால்வயது குறையுமாம்

கண்டுணர்ந்து கணித வல்லோன் கருத்துடன் செப்பினரே.

- **மணிமந்திர வைத்திய ரோகம்**

என்னவே வாதம் தாணென்பதாகும்

இகத்திலே மனிதர்களுக்கு செய்யுவாறு

பின்னவே பொன்தனையே சோரங் செய்து,

பெரியோர்கள் பிராமணரைத் தூகூடிணித்தும்,

வன்தேவற் சொத்திற் சோரஞ் செய்து

மாதா பிதா குருவை மறந்த பேர்க்கும்

கன்னவே வேகத்தை நிந்தை செய்தல்

காயத்தில் கலந்திடுமே வாதந் தானே''

- **யூகி சிந்தாமணிபாடல் 243**

''தானென்ற கசப்போடு துவர்ப்புறைப்பு

சாதகமாய் நெஞ்செலுச் சமைத்த வண்ணம்

ஆனென்ற வாறினது பொசித்தலாலும்

ஆகாயத் தேறலது குடித்தாலும்

பானென்ற பகலுரக்க மிராவிழிப்பு

பட்டினியே மிகயுறுதல் பாரமெய்தல்

தேனென்ற மொழியார்மேள் சிந்தையாதல்

சீக்கிரமாய் வாதமது செனிக்குந் தானே''.

தாய், தந்தை, குரு இவர்களை மறத்தல், வேதத்தைப் பழித்தல், கசப்பு, துவர்ப்பு, உறைப்பு சேர்ந்த உணவை அருந்துதல், ஆறின உணவை உண்ணல், தேங்கிய நீர், லாகிரியானைகள், சாராயம் குடித்தல், பகலில் தூங்கி இரவில் விழித்திருத்தல், அதிகமாக பட்டினி கிடத்தல், மிகுந்த சுமையைத் தூக்குதல், பெண்ணின் மேல் சதாநினைப்புக் கொள்ளல் ஆகிய காரணங்களால் வாதநோய் உண்டாகும்.

''வளியுமைந் தன்னிலை கெட்டு

வலியுடன் வீக்கச் சுரமும் காய்ந்து

மூட்டுகள் தோறும் முடுக்கியே நொந்து

மூட்டுகள் தன்னில் நீரும் சுரந்து

தாங்கொணா வலியுமா நொந்திடுமம்மே''

- **சபாபதி கையேடு**

Following precipitating factors are caused the disease,

- Increased intake of tuber
- Wandering of chill weather
- Drenching in Rain
- Living in hilly region
- Excessive sexual intercourse
- Hereditary
- Excessive intake of bitter, astringent, acrid taste food, intake of varagu thinai and altered sleep pattern also contribute to vatha disease.

சுவை

புளிதுவர் விஞ்சுங்கறி யாற்பூரிக் கும்வாம்

ஒளியுவர்கைப் பேறில் பித்துச் சீறும் - கிளிமொழியே

கார்ப்பிணிப்பு விஞ்சிற் கபம்விஞ்சு சட்டிரதச்

சேரப் புணர் நோயணுகாதே.

என்பதினால் புளிப்பு, துவர்ப்பு அதிகமுள்ள உணவுகளால் வாதம் மிகுதிப்படும்.

உணவு

"வளிதரு காய்கிழங்கு வரைவிலா தயிலல் கோழை

முளிதயிர் போன்மிகுக்கு முறையிலா வுண்டி கோடல்

குளிர்தரு வளியிற் றேகங் குனிப்புற வுலவல் பெண்டிர்

குளிதரு மயக்கம் பெற்றோர் கடிசெயல் கருவியாமால்".

- **சபாபதி கையேடு**

"தொழில்பெறு கைப்புக் கார்த்தல், துவர்த்தல் விஞ்சுகினுஞ் சோறும்

பழையதாம் வரகு மற்றைப் பைந்தினை யருந்தினாலும்

எழில் பெறப் பகலுறங்கி இரவினிலுறங்களத்தாலும்

மழை நிகர் குழலினாலே வாதங்கோ பிக்குங்காணே''

- **பரராச சேகரம்**

கைப்பு, துவர்ப்பு, கார்ப்பு, பதார்த்தங்களை மிகுதியாக உண்ணல், பழைய சோறு, வரகு, திணை உண்ணல், பகலில் உறங்கி இரவில் விழித்திருத்தல் ஆகிய காரணங்களினால் வாதம் மிகுதிப்படும்.

Environmental factors (புறசூழ்நிலைகள்)

''வாத வர்த்தனை காலமேதோ வென்னில்

மருவுகின்ற ஆனி கற்கடமாகும்

ஆதவைப் பசியோடு கார்த்திகை தன்னில்

அடருமே மற்ற மாதங்கள் தன்னில்

போகளே சமிக்குகின்ற காலமாகும்.''

பொருந்தியே யிவர் தொழில் தான் கண்டிறத்தல்

காதவே கண்மூடல் கைகால் சைத்தல்

கடிந்தோட்ட முடக்கலொடு நீட்டவென்னே''.

- **யூகி சிந்தாமணிபாடல்**

From the month of Aani to Karthigai (June to December), vatha diseases are precipitated, hence the seasonal factors are involved and facilitate the vatha diseases.

''பதுமத்தை பூக்க வைக்கும் பானுமிக்க காயும்

முதுவேனி லிற்பு விந்நீர் முற்றும் - கதுமென

வற்றும் கப.்.கும் வாயுமிகும் வாழ்மாந்தீர்க்

குற்ற நலிக் கேதிதென் நோது''

- **மருத்துவர் தனிப்பாடல்**

விளக்கம்

முதுவேனில் காலத்தில், சூரியவெப்பத்தின் காரணமாக பெரும் வாரியாக நீர்ஆவியாக்கப்பட்டு பூமியில் வறட்சி நிலவும். அதுபோல் நமது உடலில் வறட்சி ஏற்பட்டு வளிநோய் வருவதற்கு ஏதுவாகிறது.

பழக்கவழக்கங்கள்

''வெய்யிலில் நடக்கையாலும் மிகத்தண்ணீர்

செய்யிழை மகளிரைச் சேர்ந்தனு பவிக்கையாலும்

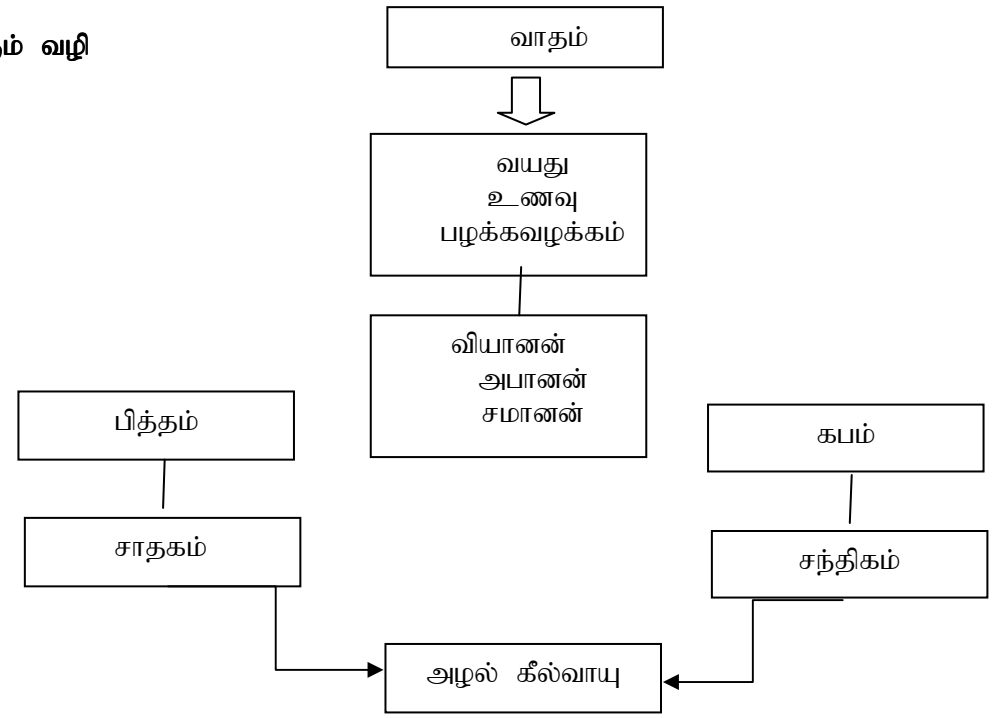
பையனே உண்மையாலும் பாகற்காய் தின்கையாலும்

தையலே வாதரோகம் சனிக்குமென் றறிந்து கொள்ளே''

- **தேரையர் வாகடம்**

- சூரிய வெப்பத்தில் அதிக தொலைவில் நடத்தல்
- அதிக தண்ணீர் குடித்ததாலும்
- அதிகளவு பாகற்காய் உண்ணுவதாலும்
- அதிகளவு காமம் துய்ப்பதாலும் வளிநோய் ஏற்படும்.

நோய்வரும் வழி



Clinical features of keelvayu

"பித்த கீல்வாயு தன்னாற் பிறங்கு கீல்மூட்டு வீங்கிச்

சித்தர் செல் மருத்துவத்துஞ் சீர்படாதன்னமத்தால்

தத்தறு காய்ச்சல் கண்டு சாலவே தனைதான் தந்தே

மெத்தற சிகிச்சை தன்னால் மென்மேல் நீங்குமப்பா"

- **சபாபதி கையேடு**

- மூட்டுகளில் வீக்கம் உண்டாகும்
- மூட்டுகளில் வலி காணப்படும்
- தீக்குற்ற மிகுதியால் கீல்களில் பசை வறண்டு, பசையற்ற கீல் அசையும் போதெல்லாம் வலி உண்டாகும்.
- சில வேளைகளில் கீல்கள் பொருத்துகள் ஒன்றோடொன்று ஒட்டிக் கொண்டு நடக்க முடியாமல் காணப்படும்.

பிணியறிமுறைமை

உடலைப் பிணித்தலால் நோயைத் தெரிந்து கொள்ளுகின்ற ஒழுக்கம் எனப்படும்.

- பொறியாற்றேர்தல்
- புலனாலறிதல்
- வினாதல்

பொறியால் அறிதல்

It means examining the patient by the physician for proper diagnosis. "Pori" is considered "Five sense organs" namely,

1. மெய் (skin)
2. வாய் (Tongue)
3. கண் (Eye)
4. மூக்கு (Nose)
5. செவி (Ear)

ஞானேந்திரியங்களின் ஆய்வு

செவி	ஒலி அறிய செய்தல்	இயல்பு
மெய்	உடலில் ஊற்றை அறிதல்	முழங்கால் மூட்டுகளில் வீக்கம், வலி
கண்	ஒளியை அறிய செய்தல்	இயல்பு
நாக்கு	சுவையை அறிய செய்தல்	இயல்பு
மூக்கு	வாசனை நுகர செய்தல்	இயல்பு

கன்மேந்திரியங்களின் ஆய்பு

வாய்	வசனிக்கச்செய்யும்	இயல்பு
கை	இடுதலும், ஏற்றலும்செய்யும்	இயல்பு
கால்	நடக்கச்செய்யும்	முழங்கால் மூட்டுகளில் வலி, நடக்க சிரமம்
எருவாய்	மலத்தை கழிக்கும்	மலச்சிக்கல்
கருவாய்	கரு, சுக்கிலத்தைக் கழிக்கும்	இயல்பு

எண்வகைத்தேர்வு

''வாதத்தில் சேத்தும மாகில் வலியோடு வீக்கமுண்டாம்''

- அகத்தியர் நாடி

''அறிந்துபார் வாதமே தனித்தானால்

சரிந்திடவே கால் முடக்கும்''.

- அகத்தியர் ரத்தின சுருக்கம்

''காணப்பா வாத மீறில் கால்கைகள் பொரந்தி நோகும்

வாதம், வாதபித்தம், பித்தவாதம் - காவியநாடி

1. ஸ்பரிசம் - பாதிக்கப்பட்டுள்ள மூட்டு பகுதியில் மித வெப்பமாகவோ, இயல்பாகவோ காணப்படும்.

2. நா - இயல்பு, வாதநோயில் நா துடித்து இருக்கும்.
3. நிறம் - இயல்பு, மாநிறம்
4. மொழி - சமஒலி
5. விழி - இயல்பு, வாதநோயில் விழி கறுத்து இமைதடித்திருக்கும்.
6. மலம் - பாதிப்பு (மலச்சிக்கல் காணப்படும்)
7. மூத்திரம் - கடுப்புடன் கொஞ்சமாக இறங்கும்.

Neikkuri

"அருந்து மாறிரதமும் அவிரோதமதாய்
அ.ं.கல் அலர்தல் அகாலவூண் தவிர்தழற்
குற்றள வருந்தி உறங்கி வைகறை
ஆடிக் கலசத் தாவியே காதுபெய்
தொரு மூகூர்த்தக் கலைக்குட் படுநீரின்
நிறக்குறி நெய்க்குறி நிருமித்தல் கடனே"

- சித்த மருத்துவாங்கச்சுருக்கம்

எண்ணெய் விட்டுப் பார்க்கும் நீரின்விழி

நிறக்குறிக் குரைத்த நிருமாண நீரிற்
சிறக்க வெண்ணெய்யோர் சிறுதுளி நடுவிடுத்
தென்றுறத் திறந்தொலி ஏகாதழைத்தி
னின்றதிவலை போம் நெறிவிழியறிவும்
சென்றது புகலுஞ் செய்தியை யுணரே

- நோய்நாடல் நோய்முதல்நாடல் பிரிவு-1

"அரவென நீண்டின்.ं.தே வாதம்
ஆழிபோற் பரவின் அ.ं.தே பித்தம்
முத்தொத்து நிற்கின் மொழிவ தென் கபமே
அரவில் ஆழியும் ஆழியில் அரவும்
அரவின் முத்தும் ஆழியில் முத்தும்"

- சித்த மருத்துவ நோய்நாடல் நோய் முதனாடல் திரட்டு

Neerkkuri

"வந்த நீர்க்கரி யெடை மணம் நுரை எஞ்சலெ

றைந்திய லுளவை யறைகுது முறையே"

- சித்த மருத்துவாங்கசுருக்கம்

Urine is examined for the following Neerkuri

Niram - Colour

Edai - Specific gravity

Manam - Smell

Nurai - Frothy nature

Enjal - Quantity of urine voided

In Azhal Keel vaayu straw or hay coloured urine was noticed in Neerkuri.

PARUVA KAALAM

Siddhars are classified a year into six seasons,

Kaalam	Kutram	Suvai
Kaarkaalam Aavani & Purattasi (Aug 16 – Oct 15)	Vatham (Vetrunilai valarchi) Pitham (Thanilai valarchi)	Enippu Pulipu Uppi
Koothirkaalam Iypassi & Karthigai (Oct 16 – Dec 15)	Vatham (-) (Thanilai adaithal Pitham (Vetrunilai valarchi)	Enippu Kaippu Thuvarppu
Munpanikalam (Margazhi & Thai (Dec 16 – Feb 15)	Pitham (Thanilai adaithal)	Enippu Pulippu Uppu
Pinpani kaalam Massi & Panguni (Feb 16 – Apr 15)	Kabam (Thanilai valarchi)	Enippu Pulippu Thuvarppu

7 உடல் தாதுக்களின் ஆய்வு

வ.எண்	உடல்தாதுக்கள்	தொழில்	அழல்கீல்வாயுவில் காணப்படுவது
1.	சாரம்	உடலை, மனதை ஊக்கமுறச்செய்தல்	பாதிப்பு
2.	செந்நீர்	அறிவு, வன்மை, ஒளி செருக்கு இவைகளை நிலைக்கசெய்தல்	இயல்பு
3.	ஊண்	உடலில் உருவத்தை அமைத்தல், என்பை வளர்த்தல்	பாதிப்பு
4.	கொழுப்பு	உறுப்புகள் இயங்க அவற்றிற்கு நெய்ப்பு பசை ஊட்டுவது	பாதிப்பு (கீல்களில் நெய்ப்பு பசை குறைதல்)
5.	எலும்பு	உடல் அசைவிற்கு அடிப்படையாயிருத்தல்	பாதிப்பு
6.	மூளை	என்புக்குள் நிறைந்து வன்மையும், மென்மையும் தருவது	பாதிப்பு
7.	வெண்ணீர்	கருதோற்றத்திற்கு முதலாய் நிற்பது	இயல்பு

In Azhal keel vayu,

Saaram, kozhuppu, Oon and Enbu thathukkal are chiefly affected.

முக்குற்ற வேறுபாடு

வளிமிகு வபான வியான

வாயுக்க ளதிக ரிக்கும்

இளமிக மலநீர்க் கட்டும்

இயம்பிய வபானன் செய்யும்.

வாதம்

வ.எண்	வாதம்	தொழில்	அழல்கீல் வாயுவில் பாதிக்கப்பட்ட குற்றம்
1.	பிராணன்	மூச்சு வாங்கல் விடுதல் செய்யும்	இயல்பு
2.	அபானன்	கீழ்நோக்கி மலத்தைத் தள்ளும்	பாதிப்பு (மலக்கட்டு)
3.	வியானன்	உறுப்புகளை நீட்டி மடக்க செய்யும்	பாதிப்பு (கால்களை நீட்டி மடக்கசிரமம்)
4.	உதானன்	உணவின் சாரத்தை உடலில் நிறத்தம்	இயல்பு
5.	சமானன்	மற்ற வாயுக்களை சரிபடுத்தும்	பாதிப்பு (மற்ற வாயுக்கள் பாதிப்பு)
6.	நாகன்	எல்லா கலையும் கற்கும் படி செய்தல்	இயல்பு
7.	கூர்மன்	கண்களை திறக்கவும் மூடவும் செய்யும்	இயல்பு
8.	கிருகரன்	நாவிற் கசிவையும் நாசியிற் கசிவையும் உண்டாக்கும்	இயல்பு
9.	தேவதத்தன்	சோம்பல், உடல் முரித்தல் உண்டாக்கும்	பாதிப்பு (வயது காரணத்தால்)
10.	தனஞ்செயன்	இறந்த பின் மூன்றாம் நாள் தலைவெடித்து வெளியேறும்	-

பித்தம்

வ.எண்	பித்தம்	தொழில்	அழல்கீல் வாயுவில் பாதிக்கப்பட்ட குற்றம்
1.	அனற்பித்தம்	உண்ட உணவு பொருளை செரிக்கும் படி செய்யும்	பாதிப்பு (பசியின்மை, உணவு செரியாமை)
2.	இரஞ்சகம்	செந்நீரை மிகுதிபடுத்தும்	பாதிப்பு (செந்நீர் குறைவு)
3.	சாதகப்பித்தம்	விருப்பமமான தொழிலை செய்து முடிக்கும்	பாதிப்பு (கால்களை நீட்டி, மடக்க சிரமம்)
4.	ஆலோசகபித்தம்	கண்களுக்கு பொருளை தெரிவிக்கும்	இயல்பு
5.	பிராசக பித்தம்	தோலுக்கு ஒலியை கொடுக்கும்	இயல்பு

ஐயம்

வ.எண்	கபம்	தொழில்	அழல்கீல்வாயுவில் பாதிக்கப்பட்ட குற்றம்
1.	அவலம்பகம்	மற்ற நான்கு ஐயங்களுக்கும் பற்று கோடாயிருக்கும்	பாதிப்பு
2.	கிலேதகம்	செரித்தல்	இயல்பு
3.	போதகம்	சுவையை அதிகரிக்கும்	இயல்பு
4.	தற்பகம்	கண்களுக்கு குளிர்ச்சி	இயல்பு
5.	சந்திகம்	கீல்களில் நின்று இயற்கையாய் எல்லாக் கீல்களையும் ஒன்றோடொன்று பொருத்தி தளர செய்யும்	பாதிப்பு (நீட்டி மடக்க சிரமம்)

நோய்கணிப்பு விவாதம்

வளிக்கீல்வாயு

வலிக்குத்தல் வீக்கங்காணும் வாய்த்தொண்டை வறட்சி காய்ச்சல்

தலைவலி மார்துடிப்புத் தாங்கொணா வலி வீக்கந்தான்

நிலவு காங்கணுக் குறங்கு நீடு தோள் முழங்கைக் காற்காம்

மலக் குடற்கட்டு வேர்வை வாதக்கீல் வாயு விதாமே

- சபாபதி கையேடு

அறிகுறிகள்

- தாங்கமுடியாத வலி
- கால்விரல்
- முழங்கால் மூட்டு
- இடுப்பு மூட்டு
- முழங்கை மூட்டு
- தோள் மூட்டு
- இம்மூட்டுகளில் வீக்கம்
- வாய் வறட்சி, சுரம், தலைவலி, படபடப்பு, மலச்சிக்கல், வியர்த்தல் ஆகிய அறிகுறிகள் உள்ளன.

ஐயக்கீல்வாயு

‘‘கருதருங் கபக்கில் வாயு கண்டிடின் உடல் இளைக்கும்

உருமெலிவாக்குங் கொள்ளும் உண்டியைச் சுருக்கு மின்பந்

தருதுயில் நீங்கு முட்டிற் நாங்கொணா வலுவையாக்கும்

இருமலே விக்கல் வாந்தி, சோபை பாண்டெழுப்பும் பாரே.

- சபாபதிகையேடு

அறிகுறிகள்

- மூட்டுகளில் தாங்கமுடியாத வலி
- உடல்மெலிவு
- பசியின்மை
- விக்கல்
- வாந்தி
- பாண்டு

3. வளிஜயக் கீல்வாயு

‘‘அவையம் வாதக் கபக்கீல் வாயுவான் வலி மிகுந்தே

உயங்கு நீர் கோத்து கீல்கள் ஓரியின் தலைபோற் காணும்

நயங்கொள்ள முடக்கல் நீட்டல் நண்ணிடா மெய்யுங் காயும்,

மயக்குறு முறக்மின்னாம்மன்னிய நெரிகட்டாமே

- **சபாபதி கையேடு**

அறிகுறிகள்

- மூட்டுக்களில் வலி
- வீக்கம்
- கீல்கள்
- நரியின் தலைபோல் காணப்படும்
- நீட்ட நடக்க முடியாது.

மருத்துவம்

மூன்றிலொன்று யர்ந்ததை முன்னறிந்து

முந்தியதனை யொழித்திட மருந்திடு

தணியும் நோயின் தந்திரமிதுவே

பேணிக் கணித்திடின் பிறவாய் பின்குணம்

- **நோய்நாடல் நோய் முதல்நாடல் (பாகம்-1)**

The treatment in siddha system includes not only the removal of signs and symptoms of a disease but also in total uprootment of the diseases.

This is achieved by normalising the deranged mukkutram there by retaining body's natural health. The recurrence of the disease is prevented by the practice of yoga. According to siddha system line of the treatment is divided into 3 types.

1. Kappu (Prevention)
2. Neekam (Treatment)
3. Niraivu (Restoration)

1. Kappu (Prevention)

The preventive azhal keel vayu is,

1. Control the body weight by diet & exercise.
2. Modify the nature of work which gives stress to a particular joint.
3. Avoid excess intake of sour, astringent and bitter tasted food.

   In azhal keel vayu the deranged vatham and other toxic products of digestion and metabolism is brought to its normal state by purgation (விரேசனம்)

விரேசனத்தால் வாதந்தாழும்

15ml of vellai ennai is given the luke warm water at early morning before starting the treatment with trial drug.

a. Internal Medicine

Panja Lavana parpam - 5 gm in two divided doses/day after food.

Adjuvant - Asaefotida and Honey

b. External medicine

Lahu vadha kesari thylam – External application over the affected joints.

3**. Complementary therapies**

Apart from other department, Sirappu Maruthuvam department gives equal importance to complementary therapies in siddha system of medicine along with its internal & external medicines.

There are several complementary therapies followed in siddha system of medicine such as Kattu, Pattru, Nasiyam, Attai vidal, Thokkanam, Ottradam, Varmam Asanam, Vedhu etc.

Complementary therapies which are taken into account for this study are:

விரேசனத்தால் வாதந்தாமும்

15 ml of vellai email is given with like luke warm water at early morning (single dose) before starting the treatment with trial drug.

a) Panjalavana parpam – 5.1gm in two divided doses / day after food
b) Lahu vadha kesari thylam – External application over the affected joints.
c) Complementary therapies: (துணை மருத்துவம்)

   Apart from other department, sirappu maruthuvan department gives equal importance to complementary therapies in Siddha system of medicine along with its internal and external medicines. There are several complemtary therapies followed in Siddha system of medicine such as kattu, patttu, Nasiyam, Attai, Vidal, Thokkanam, Ottradam, Varmam, Asanam, Vedhu etc.

I. Varmam
II. Thokkanam and ottradam

வர்மம்

மனித உடலில் சில குறிப்பிட்ட (அ) எல்லா நேரத்திலும் குறிப்பிட்ட வேகத்தில் காயம் ஏற்பட்டு செயலிழத்தல் நோய் தோன்றல், மயக்கம் மற்றும் மரணம் ஏற்படுகிறது. இதுவே வர்மம் எனப்படும்.

வர்மம் 108

1. படுவர்மம் - 12
2. தொடுவர்மம் - 96

Varmam points

Varmam is a branch of siddha medicine. It is one of the Tamilnadu priceless living heritage. Varma is a point where prana exists. An equillibrium of this points contributes to good health. If any varma points are deranged or affected the related limbs or part of the body get affcicated causing particular problem.

மூட்டுவலி தீருவதற்கான சிறப்பு வர்ம புள்ளிகள்

1. மூட்டு வர்மம்
2. சந்தி வர்மம்
3. மொழிபொருத்து வர்மம்
4. அசை திரிகண்ணு வர்மம்
5. பதைப்பு வர்மம்
6. சிரட்டை வர்மம்

1.மூட்டுவர்மம்

Location: Anterior surface of the knee joint

2. சந்தி வர்மம்

Location: On either side of the mootu varmam

3. மொழி பொருத்து வர்மம்

Location: Posterior surface of the patella

4. அசைவு திரிகண்ணு வர்மம்

Location: In the anterior surface, 2 finger breadth side wards to the knee joint.

5. பதைப்பு வர்மம்

Location: Either side of the patella at the posterior surface

6. சிரட்டை வர்மம்

Location: Present at the patella bone.

SIRAPPU MARUTHUVAM FOR AZHAL KEELVAYU

1.THOKKANAM

2. OTTRADAM

THOKKANAM

Thokkanam is the siddha way of touch therapy. it is the physical manipulation of the body usually done with or without oil application. It is very effective for neurological and musculoskeletal problems. It also promotes mental and physical fitness. According to siddha, disease in the body occur due imbalance of three humours that is vatham, pitham and kapham which in turn are governed by five fundamental elements – Akayam (Space, vayu (air), Theyu (fire), Appu (water and Mann (Earth. Thokkanam is one of the 32 types of external medicines mentioned in siddha literature. In this technique, the physician uses his hands on the body of the patient in 9 different unique ways with or without using medicated oil with acurative or palliative point of view. The 9 different techniques in thokkanam which makes siddha medicine unique in all aspects. They are

1. Thattal or patting technique
2. Irukkal or tightening
3. Pidithal or holding
4. Murukkal or twisting
5. Kattal or tying
6. Azhuthal or pressing
7. Izhuthal or pulling
8. Mallathuthal or supinating

Benefits of Thokkanam

- Helps to cure vatha disease even without internal medicines.
- Chronic disease like spondylosis, lumbago, disc prolapse, hemiplegia, neurological conditions etc are managed well through thokkanam.
- Improve circulation
- Treats obesity
- Helps in pain relief
- Removes indigestion, constipation and flatulence
- Induce sleep
- Helps maintain normal blood pressure
- Restores vatham, pitham and kapham in normal ratio
- Regulates vatha humour.
- Delays the aging process
- Helps to rejuvenate the body.
- Helps to increase the quantity of oxygen in the cells.
- Helps to prevent wrinkles and maintain the complexion of the skin.
- Tones the muscles
- Helps to keep the joint flexible
- Improves the complexion of the skin
- Improves energy and mental alertness.

Introduction

External remedies in siddh are classified as 32 in number. The unique remedy of its kind among all and which is subdivided into nine more procedures in thokkanam. Initially these procedures were used only for royal families to enhance rejuvenation and latter turned into a therapeutic application.

Thokkanam as a whole focuses on treating disease caused by aggravation of 'VATHAM' the kinetic force of the body. The humoral theory of siddha states that vatham is the acitve force responsible for the physiological functioning of neuromuscular as well as musculo skeletal systems.

Thokkanam is also useful in disease where pitham as well as kapham is deranged. A simple thokkanam session wipes of sedentary feel which is a kapham aggravation.

Toning the skin, muscles and nerves where vatham lives. It is synonymously called as Marthanam. Marthanam is performed by mallars (wrestlers) in older days. As per siddha basic principles the meeting points of muscles, nerves, joints and skin including hair roots are places of flow of vital vatham energy. A depletion of vatham vital energy may lead to vatham derangements such as pain, altered tone, power, twitching, spasticity, rigidity numbness and neuritis.

Three humour theory and thokkanam

To have a sound knowledge in application of thokkanam clinically it is mandatory to know about three humour theory. Vatham is the force of creation. Pitta is the force of maintenance, and kapham is the force of destruction.

Vatham takes care of bodily funciton as below

1. Respiration - Uyirkal (Pranan)
2. Excretion - Keel nokku kaal (Abanan)
3. Circulation - Paravukal (Vyanan)
4. Digestion - Nadukkal (Samanan)

Thattal – Friction and Percussive strokes

Thattal covers more than 40% of techniques of Marthanam.

Friction strokes are used in joints, muscles and in tendons. Friction strokes are usually relaxing when applied gently. Therapist should not exceed the toleratble and pleasurable pressure.

Percussive strokes are sub divided into hacking, cupping and pinching – plucking. In hacking palms are open and faces each other.

Cupping is performed effectively in larger areas like trunk, back and abdomen.

Lifting little flesh in fingers and sliding them is pinching/plugging.

Benefits

1. Improves circulation
2. Release muscle tension.

Precautions

Precussive strokes directly on spine is to be avoided. Therapist hands and wrist should be held relax.

Irukkal

Irukkal is squeezing type of pressure. Irukkal is applied in conditions where a good nourishment to muscles and nerves is deficit. It is also called as wringling. It is usually performed across body and limbs. Wringing is usually applied in the end hours of Thokkanam. Squeeze and roll the muscle between your neck and shoulder. It's hard to tell from the photo that he's doing anything other than squeezing the muscle, But you should in addition to squeezing your muscle also pull or roll the muscle between your fingers. Try it. first squeeze the muscle, just like you did above. Then pull it a little and roll it in a small circle of back and forth. Try 7 slow squeeze and rolls on your trapezius muscle varying the intensity of each stroke. Let your muscles relax.

Purpose

Squeezing and Rolling increases your circulation and warms your muscles.
It also gives your fingers a good workout.

Ilutthal

Ilutthal is pulling. In this type of thokkanam, strokes are used to pull and stretch the muscles of the trunk and legs. Pulling is performed before wringing or along.

Murukkal

Murukkal is kneading. It is performed to release muscle tension and to improve circulation kneading is performed in areas which are fleshy. Action similar to that of kneading dough is to be performed here.

Pidithal

Both pressing and draming is performed in this variety. Press the muscle areas gently and drain them slowly. Draining is performed usually using the heel of the hand for larger areas and thumbs for smaller areas. Pidithal improves circulation and relaxes the muscles.

Aluthal

Aluthal is the combination of gliding and gentle pressing. Usually these two procedures initiates massage and repeatedly performed in the whole session gliding is the technique used to apply oil all over the body. Gentle pressing all over the body following gliding. Gliding can be done in longitudinal or circular motion.

Purpose

Gliding is a good beginning for every massage. It warms your skin and sends a message to your body that a massage is coming.

Tips

Velocity, volume and intensity are three variables you can use to change the effect each stroke has on you.

Volume

Try covering more skin with each stroke by spreading your fingers wide or make a with your hand

Velocity

Try varying the speed of your strokes

Intensity

Try varying the intensity of each stroke

Squeezing

Try it interlace your fingers. Rest the heels of your hands on either side of your thigh and squeeze your hands into your thigh muscles. Try 7 slow quad squeezes, slightly vary the location and intensity of each squeeze. Now try it on your other leg.

Purpose

Squeezing warms muscles, increases circulation and speeds recovery.

Stroke description

Bring pressure to bear on a muscle. Try squeezing your left biceps with your right hands. It really is a simple as squeezing the muscle. It should feel good.

Squeezing & Rolling

Try it: Squeeze and roll the muscle between your neck and shoulder. It's hard to tell from the photo that he's doing anything other than squeezing the muscle. But you should in addition to the muscle. Just like you did above. Then pull it a little and roll it in a small circle of back and forth. Try 7 slow squeeze and Rolls on your trapezius muscle varying the intensity of each. Stroke let your muscles relax.

Purpose

Squeezing and Rolling increases your circulation and warms your muscles. It also gives your fingers a good workout.

Pressing

Try it. Take off your shoes and socks and give your foot a poke, press your thumb into the bottom of your foot and your other four fingers into the top of your foot. Try 7 slow presses. Experiment by varying intensity and moving your fingers slowly over your foot. Try it on your other foot.

Purpose

The press is powerful because it activates acupoints triggers trigger points, jump starts circulation, and sends endorphin cocktails flowing to every cell.

Pressing and Rolling

Try it: Starting at your solarplexus. Press and roll your abs. Perform a series of small circular rolls with your first moving clockwise, until. You've covered your entire belly with your first slightly vary the intensity of each stroke. Alternately, relax and flex your abs. Feel the difference between pressing and pressing and rolling your abs. It's like night and day.

Purpose

Pressing and Rolling activates, acupoints triggers trigger points, jump starts circulation and sends endorphin cocktails cruising to stimulate every cell in your body.

Drumming

Try it: Drum your quads, use the sides of your hands to tap your thighs. Slightly vary the location of each stroke. Let your leg relax. focus on the rhythm and feeling of each stroke.

Purpose

Drumming is an energizing, stimulating stroke, used to get you moving.

Note

Massage therapists call this stroke trapotement It means drumming.

When you need to target a specific area of your body, switch over to manual mode. Customize your massage and choose from several programs to suit your needs for both upper and lower body. The upper body massages.

The thadavu murai is classified into two main parts. They are

1. Podhu thadaval murai
2. Uzhl thadaval murai

The pothu thadaval murai methods do proper alignment of the nerves, blood vessels, bones and muscles. With the help of medicated oils we should do the techniques. After that we have to realign the sara ottam and jeeva ottam in all varma points. By this we can give good health to the patient.

After doing this, we should check whether the patient needs uzhlthadaval murai or not. It it is needed we have to align and stimulate the tissues and internal organs.

In the first three days of treatment we should only do podhu thadaval methods, then in the 4^{th} and 5^{th} day podhu thadaval is done followed by uzhlthadaval.

Usually the treatment takes seven days. In the 6^{th} and 7^{th} day. We should only do podhu thadaval.

At the end of the thadaval murai in all the days of the treatment.

We have to give otradam, after that the patient should take hot water bath. After that the patient should take chukku kanji. The patient may take their food after an hour of these treatment methods. During the treatment days the patient must avoid sleep in the day time.

The patient should follow the following food restrictions after the thadaval murai. Chicken, uriddhal, small gram and tamarind during the treatment days. Because it may lower the effects of the treatment.

The patient should take 3 months rest after the treatment. Importantly he/she should not have sexual contact and severe exercises during the rest periods.

Massage (தொக்கணம்)

வாதம் முதலிய முக்குற்ற பிணிகள் உண்டாக்கும் வலியை வெறுங்கையாலோ (அ) தைலம் தடவியோ பிடிப்பது.

தொக்கணத்தி னாலிரத்தந் தோல்ஊ ணிவைகட்கு
மிக்கு சவுக்கியஞ்ச மீரணும்பொ – மெய்க்கதிக
புட்டியுறக்கம் புணர்ச்சி யிவை கதிக்கும்
பட்ட அலைச்சலறும் பார்''

- **தேரன்**

of these 2 of the methods are very much beneficial in treating cervical spondylosis.

பிடித்தல்

''பிடித்தலி யங்கும் மைதியி னுந்தகும் பிந்தாதே – எண்ணெ
யுடுத்தது செய்யிற் றசவளி யூனுட லுந்தாதே
வேற்றது செய்யினுஞ் சூசிகை பாரிசை விட்டோடும் - புலி
போற்றது வாயுவு மற்றுது மேனலிப் பொட்டோடும்''

தொக்கணம் செய்யக்கூடிய 5 நிலைகளிலும் செய்யலாம். தைலம் தடவியோ, தடவாமலோ பிடித்துவிட வாத நோய்களுக்கு சிறப்பாக பொருந்தும்.

It is made on the upper fibers of trapezius muscle and the underlying bone.

இழுத்தல் (Pulling)

இழுத்தல் கிடத்த லிருத்த லிரண்டிற்கு மேராமே – என்பில்
முழுத்தது வண்ணுகங் கானமந் தக்கதி சீராமே
உருவுத லென்பது மித்தோழி லேநேரம் பூறாகி – மனம்
வெருவுறு மூன வினைகளை மெய்யடு வேறாகி
வளக்குறு மெண்ணெய் லேயிது செய்வது வல்லாண்மை – உடற்
களக்களுர் போக்கச் சுளுக்கென வாவதித் தொல்லாண்மை''

இதை தைலத்தை பூசியே செய்யவேண்டும். எலும்புகள் நன்றாய்த் தெரியுமிடங்களிலும், தலையிலும் உருவும்போது மந்தமாக செய்யவேண்டும்.

இதனால் நரம்பில் ஊறி வறுத்துகின்ற வாயுக்கள், பிடிப்புகள், சுளுக்குகள் குணமாகும்.

Done for sternocleidomastoid muscles.

The treatment normally starts with applying the medicated oil on the affected area. It directly acts on lymphatic, muscular, nervous and vascular system.

- Strengthens muscle and skin
- Relaxes whole body
- Regulates nerve function
- Improve blood circulation
- Improve sleep

Through massage, the medicated oil applied permeates through the skin and reaches the tissues under them. It releives pain and tension by stimulation the sensory and motor nerves.

Benefits

It reduces the production of some hormones such as cortisol and nor epinephrine which are responsible for stress.

- Brings fresh oxygen to the affected tissues.
- Swelling and thickening of tissues are reduced.

FOEMENTATION

Definition

A fomentation consists of a local application of moist heat to the body surface. A fomentation is usually made of blanket material. 50% wool to retain heat and 50% cotton to retain moisture and be more durable.

Physiologic effect

1. Promotes increase in circulating white blood cells.
2. Increases blood flow to the skin, thereby relieving internal congestion.
3. Relieves muscle spasm by increasing circulation and releasing muscle tension.
4. Relieves pain in muscles and joints by counter-irritation and de congestion.
5. Reflexly relieves pain from internal organs.
6. Increases elimination by promoting sweating
7. Stimulates or sedates according to the temperature of the application.

Indications

1. Joint pain
2. Neuralgia and Neuritis pain
3. Muscle tension
4. Insomnia
5. To warm the tissues in preparation for massage.
6. To prepare for cold procedures.

Contra indications and cautions

1. Loss of skin sensation due to unconsciousness paralysis of the part legs and feet of diabetic
2. Leg or feet oedema, varicose veins, advanced vascular disease.
3. Malignancy
4. Tendency to bleed (haemorrhage)
5. Stomach or bowel ulcers.
6. Omit cold in extreme pain such as pleurisy, Renal colic and dysmenorrhoea.

ஒற்றடம்(Fomentation)

மருந்து பொருட்களை வறுத்து துணியில் முடிந்து நோயுள்ள இடங்களில் ஒற்றுதல்.

It is also one of the 32 external theraphies of siddha medicine by application of hot medicated packs.

The medicated pouches are made up of leaves that contains.

- Pelonex elata (வாத நாராயணன் இலை)
- Tamarindus indicus (புளியிலை)
- Vitex negundo (நொச்சி)
- Cleodendrum phlomoidis (தழுதாழை)

Uses

Increases blood circulation and reduces pain.

The treatment in siddha system includes not only the removal of signs and symptoms of a disease but also in total uprootment of the diseases.

This is achieved by normalising the deranged mukkutram there by retaining body's natural health. The recurrence of the disease is prevented by the practice of yoga. According to siddha system line of the treatment is divided into 3 types.

4. Kappu (Prevention)
5. Neekam (Treatment)
6. Niraivu (Restoration)

1. Kappu (Prevention)

The preventive azhal keel vayu is,

4. Control the body weight by diet & exercise.
5. Modify the nature of work which gives stress to a particular joint.
6. Avoid excess intake of sour, astringent and bitter tasted food.

   In azhal keel vayu the deranged vatham and other toxic products of digestion and metabolism is brought to its normal state by purgation (விரேசனம்)

MODERN ASPECT OF OSTEOARTHIRITIS

Anatomy of the knee joint

Knee is the largest and most complex joint of the body .It is chiefly a condyloid type of synovial joint. It is formed by the result of fusion of three joint in one. The original three joint included the lateral femoro tibial, medial femoro tibial and femoropatellar.

TYPE:

It is a compound synovial joint, incorporating two –condylarjoint between the condyles of femur and tibia and one saddle joint between femur and patella.

ARTICULAR SURFACES:

Knee joint is formed by

1.Condyles of femur.

2.Condyles of tibia.

3.The patella.

The femoral condyles articulate with tibial condyles below and behind and with the patella in front.Structurally,Knee is a weak joint because the articular surfaces are not congruent. The tibial condyles are too small and shallow to hold the large, convex femoral condyles. The femoropatellar articulation is also quite in secure because of their shallow surfaces, and also the outward between the axis of thigh and leg. The stability of the joint is maintained by various ligaments.

Ligaments:

Knee joint is supported by various ligaments . they are

1. Fibrous capsule .
2. Ligamentum patellae
3. Tibial collateral ligaments
4. Fibular collateral ligament

5. Obligue popliteal ligament
6. Arcuate popliteal ligament
7. Anterior cruciate ligament
8. Posterior cruciate ligament
9. Medical meniscus
10. Lateral meniscus
11. Transverse ligament

1.**Fibrous capsule:**

The fibrous capsule is very thin. Superiorly the capsule is attached to the borders of articular surface of condyles of the femur and inter condylar notch.

Inferiorly the capsule is attached to the articular borders of the condyles of the tibia

Anteriorly - capsule is deficient the opening synovial membrane of the joint extend above the patella.This is called supra patellar bursa.

The lateral side- capsule has an opening for the passage of the tendon of popliteus.

Posteriorly –oblique popliteal ligament.medial and lateral patellar retinaculae are strengthening the capsule on the sides.

2.Ligamentum Patellae:

It is strong , flat, about 8cm in length, it is situated in the anterior side of the knee joint , it is attached proximally the the apex of patella and distally to the tibial tuberosity . it is separated from the synovial membrane by the infrapatellar pad of fat.

3.Tibial collateral (medical) ligaments:

It is a broad and fiat ligament, situated in the medical side of the knee joint. Superiorly it is attached to

the medical epicondyle of femur .Inferiorly, it divides into the anterior and posterior parts .

Anterior part is attached to the medical surface of the shaft of the tibia . Posterior part is attached to the medical condyle of tibia . it is connected to the medical meniscus .It prevents the abduction of knee and limits extension of the leg.

4.Fibular collateral (lateral) ligaments:

This ligament is strong and cord like . It is situated in the lateral side of the knee joint. Superiorly It is attached to the lateral epicondyle of the femur and inferiorly to the head of fibula ,It prevents adduction of the knee and limits extension of the leg.

5.Oblique popliteal ligaments:

It extends from the tendon of semimembranosus to the lateral part of the intercondylar line and lateral condyle of femur.

6.Arcuate popliteal ligament:

It is a "Y" shaped ligament. The stem is attached to the head of the fibula. The stem divides into anterior and posterior bands . The posterior band is attached to the posterior aspect of inter condylar area of tibia. The anterior band is attached to the lateral condyle of femur.

7.Cruciate ligaments:

They are very strong. They are termed cruciate because they cross anterior and posterior from their tibial attachements. They are named as anterior and posterior according to their attachement on the tibia.

8.Anterior cruciate ligaments:

It is attached between anterior part of inter condylar area of tibia , and medial surface of lateral condyle of femur.

9.Posterior cruciate ligament:

This ligament is attached between posterior part of intercondylar area of tibia to the lateral surface of the medial condyle of femur.

Menisci (semilunar cartilage)

Menisci are two (medical and lateral) fibrocartilagenous cresents , which try to deepen the articular surfaces of the condyles of tibia , They are acting like a buffer cushion .

10.Medial meniscus :

It is nearly semi circular , it has anterior and posterior horns, They are attached to the intercondylar eminence of the tibia.

11.Lateral meniscus :

It is nearly circular and smaller than medial meniscus , it has anterior and posterior ends attached to the lateral tubercle of the intercondylar eminence of tibia .

12.Transverse ligaments:

It connects the anterior ends of the medial and lateral menisci.

Blood supply to the knee joint –

1. Genicular branches of popliteal artery
2. Desending branch of laterial circumflex femoral artery
3. Two recurrent branch of anterior tibial artery
4. Circumflex fibular branch of posterior tibial artery

Nerve supply

1. Femoral nerve
2. Sciatic nerve
3. Obturator nerve

Knee Joint Muscles

The knee joint consists of the femur (thigh bone), tibia and fibula with the patella or kneecap. Muscles producing joint actions at the knee joint are the quadriceps muscles (vastus medialis, vastus lateralis, vastus intermedius and rectus femoris at the front, with the hamstring muscles

(semitendinosis, semimembranosus and biceps femoris) at the back along with the popliteusmuscle.

The Hamstring Muscles

The hamstring muscles at the back of the thigh consist of the biceps femoris, semitendinosus and semimembranosus.

Vastus Medialis

Vastus Medialis is the most medially (inner) located of the quadricep muscles. The portion of the muscle just above the knee is known as VMO (vastus medialis oblique). This is important in stabilising the knee joint and often becomes inhibited following injury.

Vastus Lateralis

Vastus Lateralis is the most lateral (outer) of the four quadriceps muscles and is felt on the outside top of the thigh.

VastusIntermedius

Vastus Intermedius is one of four quadricep muscles, located deep in the thigh underneath the Rectus Femoris muscle.

Movements of knee joint

Active movements at the knee are

1.Flexion
2.Extension
3.Medial Rotation
4.lateral Rotation

Flexion and extension are the chief movements of much greater range than rotations. These are permitted in the upper compartment of the joint , above the menisci. Flexion and

extension take place in transverse axis. During extension the axis moves upwards and forwards, During flexion the axis moves downwards and backwards.

Movements of the knee joint:

Flexion and extension are the main knee movements, some rotations occur when the knee flexed.

Locking and unlocking of the knee (conjunct rotation): locking

It is defined as medical rotation of femur on tibia during terminal stages of extension of the knee, when feet are supporting the body weight, when knee is locked , it is completely rigid and all ligaments of the joint are taut.

Unlocking :

It is defined as lateral rotation of femur on tibia during initial stages of flexion of the knee, when feet are supporting the body weight , It is brought about by popliteus, It can be flexed by the hamstrings .

Adjunct rotation : (or) Independent active rotation:

It can occur only in flexed knee. They contribute to the twisting movements of the body when feet are fixed.

Accessory or Passive movements:

It can be performed in a partially flexed knee , These movements include.

1. A wider range of rotaion
2. Anteroposterior gliding of tibia on femur
3. Some adduction and abduction
4. Some Separation of tibia from femur.

OSTEOARTHRITIS

It is a non- inflammatory degenerative disorder of joints characterized by progressive deterioration of articular cartilage and formation of new bone (osteophytes), It is called primary when the actiology is unknown of secondary when it follows some known cause Ex- trama , injection , r.a etc

It is more common in weight bearing its such as Hip & knee . It is also seen in spine Metacarpal joint of thumb & distal interphalangeal joint. The concept is wear & tear is generally attributed as a cause of osteoarthiritis .

CLINICAL FEATURES

Pain is the pain presenting sympotom , Initially the pain occur usually on or after weight bearing activity . The joint become swollen due to synorittis stiffness gradually set in following severe pain 4 capsular contracture .

In late stage of the disease the joint become defermed , A common example is gence varum deformity at the knee , It may due to caused by ligamentous instability , capsule contractures or muscle imbalance .

Narrowing of joint Space.

Osteophytes at the margins of articular cartiage.

Sclerosis and cysts in Sub condralbone.

PATHOPHYSIOLOGY OF OSTEOARTHRITIS

Osteoarthritis (OA) is the most frequent cause of disability in the United States, with the medial compartment of the knee being the most commonly affected.1 The initiation and progression of knee OA is influenced by many factors including kinematics. In response to loading during weight bearing, cartilage in healthy knees demonstrates spatial adaptations in morphology and mechanical properties. These adaptations allow certain regions of the cartilage to respond to loading while other regions are less well suited to accommodate loading. Alterations in normal knee kinematics shift loading from those

cartilage regions adapted for loading to regions less well suited. This leads to the initiation and progression of degenerative processes consistent with knee OA. Kinematic variables associated with the development, progression and severity of knee OA are the adduction moment (Madd) and tibiofemoral rotation. Due to its strong correlation with disease progression and pain, the peak Madd during gait has been identified as a target for treatment design. Gait modification offers a non-invasive option for seeking significant reductions. Gait modification has the potential to reduce pain and slow the progression of medial compartment knee OA.

Keywords: kinematics, knee, osteoarthritis, gait

Osteoarthritis (OA) is condition with a multifaceted etiology and afflicts both load bearing and non-weight bearing joints. The risk of developing OA substantially increases with each decade after the age of 45 years.2 Among reported upper and lower extremity sites, the most common region for OA to manifest is the medial compartment of the knee, and the knee will serve as the model for discussion in this review.1 The initiation and progression of knee OA involves mechanical, structural, genetic and environmental factors. During growth and development, the tibial and femoral cartilage adapt over time to cyclic loading during walking; 3 cartilage remodeling to loading also applies to other joints such as the hip.4 Knee cartilage thickens in the areas of greatest loading in both the anterior-to-posterior and medial-to-lateral regions.3 The tibiofemoral mechanics and loading patterns during walking, therefore, have a significant influence on the regional development of articular cartilage. Disruption of normal gait mechanics with trauma, acute injury, ligamentous laxity, weight gain and improper footwear can shift the loading patterns during weight-bearing to cartilage regions not well adapted to accept those loads. 3, 5–10 Although normal healthy cartilage responds positively to loading and increases regional thickness, diseased or injured cartilage degenerates and decreases regional thickness.

While there are several potential biomechanical alterations that may contribute to the onset and progression of knee OA, increased internal tibiofemoral rotation and peak knee adduction moment (Madd) during load bearing may be two factors that are of particular interest. The Madd is recognized as a clinically important measure to study medial compartment knee OA,11,12 and is a surrogate for medial contact force,13 disease severity

and progression, 14,15 and pain severity. 16 Normal tibiofemoral loading may be altered in knees with either anterior cruciate ligament (ACL) deficiency or OA, and may shift the weight bearing stressors to cartilage regions not previously adapted for load bearing.5 The loading of these non-adapted regions leads to cartilage fibrillation and local degenerative changes.3, 5, 17, 18 Correcting abnormalities of tibiofemoral rotation and/ or decreasing the Madd are clinically relevant for management of OA symptoms and progression.

This review will provide evidence regarding the potential roles of the separate and combined roles of tibiofemoral rotation and the Madd in the development and progression of knee OA. Emerging methods that favorably change these two parameters and thereby OA symptoms will be presented.Setting the Stage. With normal aging, cartilage breakdown begins in joint areas with little or no contact. As destruction advances, it moves gradually into the more heavily loaded areas. At this point, biomechanical factors such as loading patterns, tibiofemoral contact time and motions about the joint generate shear and frictional stresses.4 Cartilage softens and fibrillates. Aging or injury to the knee joint increases joint laxity and permits excess or aberrant motion about the knee, a process that exacerbates progression of OA.

ETIOLOGY:

Osteoarthritis is the most common disease of joints in adults around the world (1). Felson et al. reported that about one-third of all adults have radiological signs of osteoarthritis, although Andrianakos et al., in an epidemiological study, found clinically significant osteoarthritis of the knee, hand, or hip in only 8.9% of the adult population (2, 3). Knee osteoarthritis was the most common type (6% of all adults). The likelihood of developing osteoarthritis increases with age. Studies have shown that knee osteoarthritis in men aged 60 to 64 is more commonly found in the right knee (23%) than in the left knee (16.3%), while its distribution seems to be more evenly balanced in women (right knee, 24.2%; left knee, 24.7%) (3, 4). The prevalence of osteoarthritis of the knee is higher among 70- to 74-year-olds, rising as high as 40% (e2). When the diagnosis is based on clinical signs and symptoms alone, the prevalence among adults is found to be lower, at 10% (e3). The radiological demonstration of typical signs of osteoarthritis of the knee is not correlated with symptoms: Only about 15% of patients with radiologically demonstrated knee osteoarthritis

complain of knee pain (e4). The incidence of the disorder among persons over 70 is estimated at 1% per year.

Epidemiological studies have revealed that there are both endogenous and exogenous risk factors for osteoarthritis (table 1). Genetic factors unquestionably play a role. In a clinical study involving female twins, Spector et al. showed an effect of heredity on the development of osteoarthritis of the hip and knee (e6). In only very few cases, however, can osteoarthritis be attributed to the effect of a single gene. Its development and progression are more likely due to an interaction among multiple genes, in combination with further risk factors. Cross-sectional studies have shown that the risk of knee osteoarthritis is 1.9 to 13.0 times higher among underground coal miners than in a control population (e7– e9); presumably, the main risk factor in this occupational group is frequent work in the kneeling or squatting position. Construction workers, too, particularly floorers, have a significantly elevated prevalence of knee osteoarthritis (e10). In another epidemiological study, Grotle et al. found a significant dose-effect relationship for overweight (BMI >30) as a risk factor for knee osteoarthritis, but not for hip osteoarthritis

OSTEOARTHIRIS OF KNEE:

In osteoarthiristis of the knee major problems are pain , stiffness , Instabilty , Deformity and Functional inadequacy

1.Pain :- Pain is assessed for its character degree, posture and duration pain in O A usually noticed when the degenerated it is exposed to compressive forces , hyper vascularisation of the neighboring bone.

2.Tenderness and effusion :- The site and degree recorded

3. Range of Movements:- passive ROM inclueding the end – feel is recorded .

4.Deformity :- It is nature and extent are assed at HIP ,Knee , Ankle & foot during total weight bearing.

5.Stability :- The it is Assessed in supine & with weight bearing affected knee alone.Strengh, endurance & Hamstrings , Glutei should be recorded.

Efficancy of performing functional activities

The pattern of gait & other ambulatory para meter are evaluated knee rating scale is ideal to assess pain & functional status.

Physical demands: -

Physical demand of the patient daily routine need to be evaluated in relation to the degree of involvement.

Knee Rating Scale for Pain & Function

Pain free standing & long walk 50 mild pain ,Painless walking up to 1km 40 considerable pain on long standing / walking pain free upto less than 1/2km 20 considerable pain ,walking confined to indoor only.

Severe pain on standing /walking or even at rest.Unable to walk

Radiographic classification

Stage I – Bony Spurs only

Stage II – Narrowing of joint space less than half of normal joint space.

Stage III- Narrowing of joint space more than half of normal joint space.

Stage IV- Obliteration of joint space or bone attrition under 1 gm

Stage V – Major bone attrition more than 1gm sub luxnation or secondary lateral arthrosis.

COMPLICATION:

Possible complications of osteoarthritis include:

Rapid, complete breakdown of cartilage resulting in loose tissue material in the joint (chondrolysis).

Bone death (osteonecrosis).Stress fractures (hairline crack in the bone that develops

gradually in response to repeated injury or stress).Bleeding inside the joint.Infection in the joint.Deterioration or rupture of the tendons and ligaments around the joint, leading to loss of stability.Pinched nerve (in osteoarthritis of the spine).

MATERIALS AND METHODS

Phase II clinical observation criteria based study of siddha formulation "PANJA LAVANA PARPAM" (INTERNAL)",LAHU VADHA KESARI THYLAM"(EXTERNAL) in "AZHAL KEEL VAYU" (OSTEOARTHIRITIS) was carried out at post graduate department of Sirappu maruthuvam, GOVT. Siddha medical college hospital palayamkottai under the observation and guidance of the head of the department. In this study 20 cases were admitted in IN patient ward and other 20 cases were seen in OUT patient ward .

SELECTION OF CASES:

INCLUSION CRITERIA:

1. AGE:30-60Yrs.
2. SEX:Both Male and female.
3. Patients having symptoms of joint pain of both knee joint swelling, tenderness, stiffness, crepitations, restricted movements of both knee joints.
4. Patients who are willing to give blood samples for laboratory investigation.
5. Patients who are willing to take X-ray before and after treatment.
6. Patient who are willing to participate in this study with the knowledge of potential risks.

EXCLUSION CRITERIA:

- Systemic illness of the Patient
- Rheumatoid arthritis
- Use of narcotic drugs
- Pregnancy and lactation
- History of trauma
- Carcinoma patient
- Tuberculosis
- Immuno compromised patients
- Clinically significant abnormal laboratory values

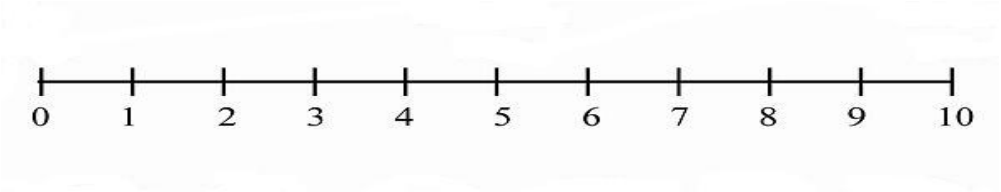
DIAGNOSIS:

The diagnosis was made by following Siddha diagnosis methods

1. Pulanal arithal
2. Poriyal arithal
3. vinaathal
4. Mukkutra Nilaigal
5. Udal Thathukal Nilai
6. Envagai thervugal
7. Neer kuri
8. Neikuri

the diagnosis of azhalkeel vayu were obtained which correlated with diagnosis of osteo arthritis by the X-Ray findings.

UNIVERSAL PAIN SCALE ASSESSMENT:



A. 0 : No Pain

B. 1 -3 : Mild pain

C. 4-6 : Moderate pain

D. 7-10 : Severe pain

Reference: Clinical Manual for Nursing Practice. (National Institute of Health Warren Grant Magnuson Clinical Center)

GRADATION OF MOVEMENTS:

Grade 1	**:**	Fit for all activities to do their work without support (Normal).
Grade 2	**:**	Mild Pain and Mild restriction of Movements.
Grade 3	**:**	Moderate Pain with or without radiation to lower limbs and Moderate restriction of Movements.
Grade 4	**:**	Severe Pain with or without radiation to lower limbs and Severe restriction of Movements.

Investigation:

The following investigations were done in all selected patients in the laboratory of Government Siddha Medical College, Palayamkottai.

LABORATORY INVESTIGATIONS:

Blood:

- TC
- DC
- ESR
- Hb

- Blood Sugar
  - Fasting
  - Random
  - Post prandial
- Blood urea
- Serum Creatinine
- Serum Cholesterol
- ASO Titre
- RA-factor
- C-RP

Urine:

- ✓ Albumin
- ✓ Sugar
- ✓ Deposits

SPECIFIC INVESTIGATIONS:

RADIOLOGICAL INVESTIGATION:

- ✓ . X- Ray of Knee Joint (AP & Lateral View)

LINE OF TREATMENT:

- ✓ They day before the internal medicine started, vellai ennai-15ml was given at early morning for purgation to correct the deranged vatham to all the patients.from the second day onwards the trail drugs were administrated.

TREATMENT

INTERNAL MEDICINE : " PANJA LAVANA PARPAM **"**

Ref: Athmaratchamirtham

DOSAGE : 5.1 gram

ADJUVANT/VEHICLE : ¼ Perungayam added to Honey

DURATION : 12 days to 24 days

EXTERNAL MEDICINE : "LAHU VADHA KESARI THAILAM"

Ref: Anubava Vaithiya Dhevaragasiam

DOSAGE : Required Amount.

1.PANJA LAVANA PARPAM as internal medicine 5.1 gm two times a day after food

2. LAHU VADHA KESARI THYLAM as external medicine

The above oil was given only for external use only affected joint

All the patient were advised to maintain dietary regiment(or) pathiyam to avoid interaction witn drugsome complementary therapies like Thokkanm and varmam were manipulated.

A.CLINICAL ASSESMENTS:

Pain and swelling in both knee joints

Stiffness in Knee Joint

Crepitus

Tenderness

Warmth

Restricted movements of knee joints

B) RADIOLOGICAL INVESTIGATIONS

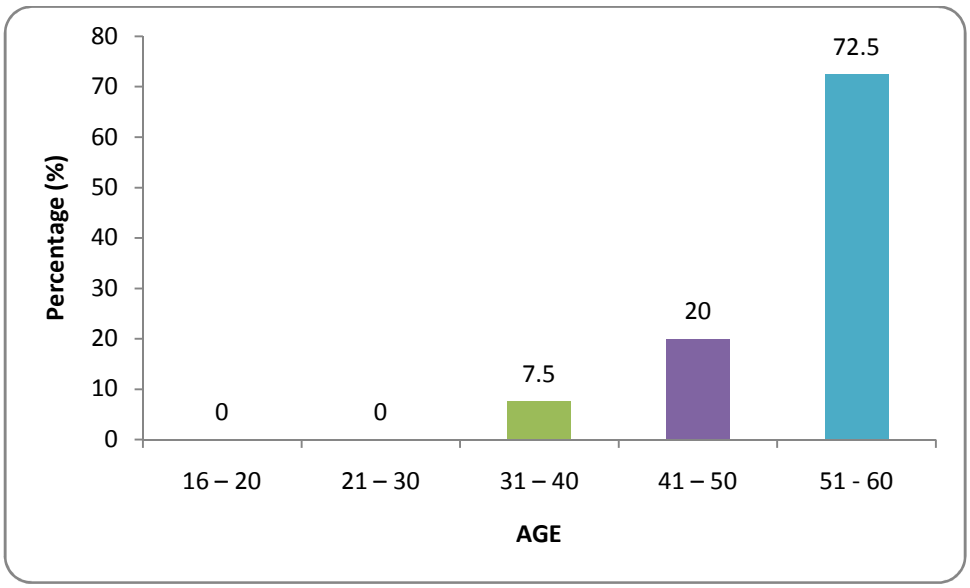
X- ray of knee joint (AP - Lateral view)

RESULTS AND OBSERVATION

1. AGE DISTRIBUTION

Table 1. Illustrates the age distributions

S.no	Age	No. Of patients	Percentage(%)
1	16 – 20	-	-
2	21 – 30	-	-
3	31 – 40	3	7.5
4	41 – 50	8	20
5	51 - 60	29	72.5
	Total	40	100



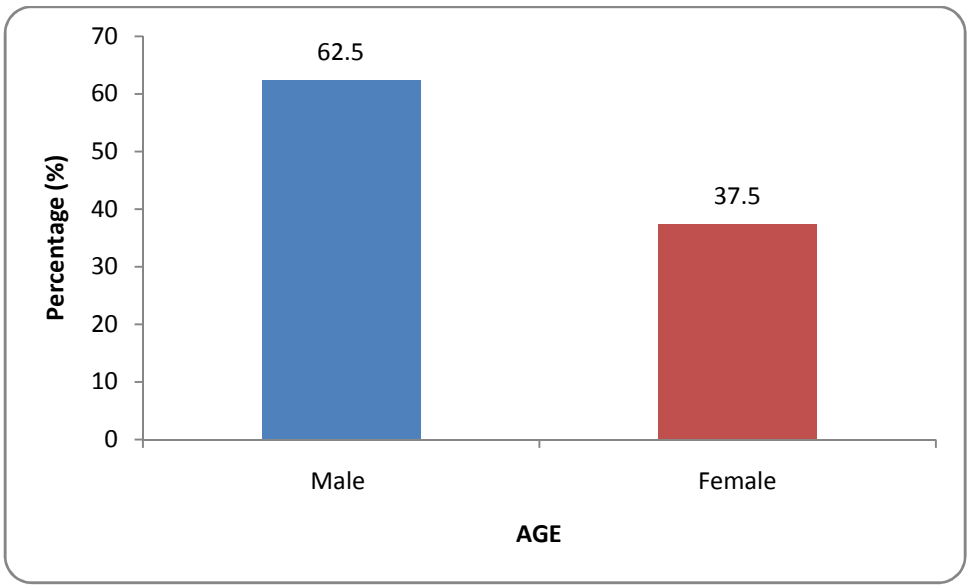
Inference

The prevalence of the disease was found to be higher in the age group 51-60 years. 31-40 age had 7.5%, 41-50 age group had 20%.

2. SEX DISTRIBUTION

Table 2. Illustrates sex distributions in relative percentage.

S.no	Sex	No. Of cases		Percentage(%)
		Op	Ip	
1.	Male	13	12	62.5
2.	Female	7	8	37.5
3.	Total	20	20	100



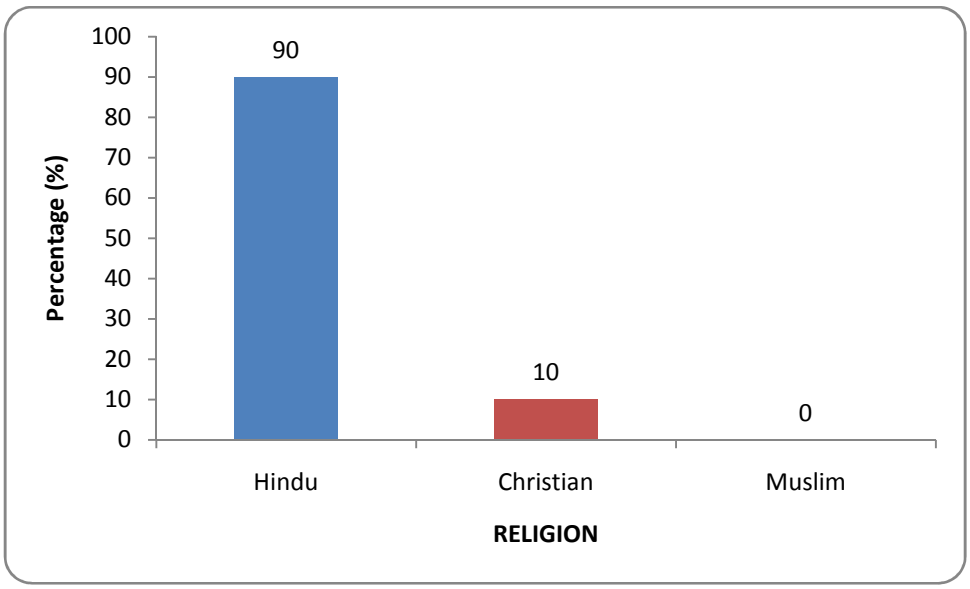
Inference

Among the 40 patients male are 62.5% affected. Female 37.5 affected.

3. RELIGION

Table 3. Illustrates the religion

S.no	Religion	No. Of patients	Percentage(%)
1	Hindu	36	90
2	Christian	4	10
3	Muslim	0	-



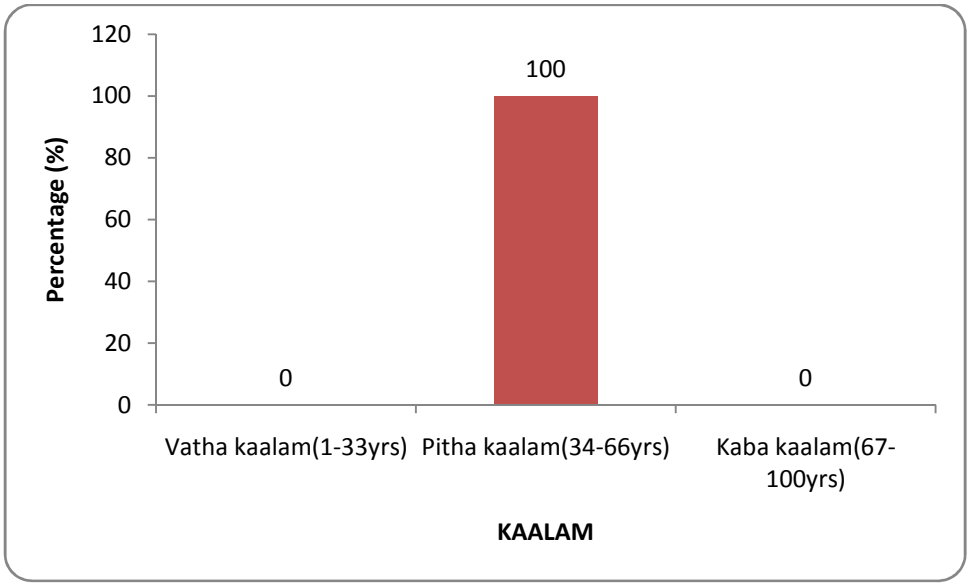
Inference

Above the religion hindu religion 90% affected. Chrisitan 10% affected.

4.KAALAM

Table 4. Illustrates the kaalam

S.no	kaalam	No. Of patients	Percentage(%)
1	Vatha kaalam(1-33yrs)	-	-
2	Pitha kaalam(34-66yrs)	40	100
3	Kaba kaalam(67-100yrs)	-	-



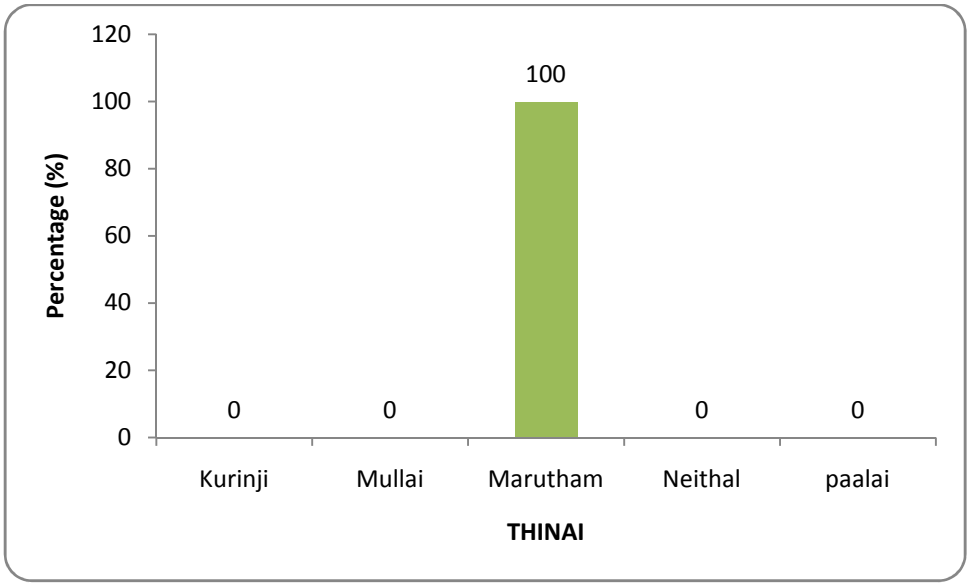
Inference

40 patients are reported in pitha kaalam.

5. THINAI (THE HABITAT OF THE PATIENTS)

Table 5. Illustrates the thinai

S.no	Thinai or Land	No. Of patients	Percentage(%)
1	Kurinji	-	-
2	Mullai	-	-
3	Marutham	40	100
4	Neithal	-	-
5	paalai	-	-
	Total	40	100



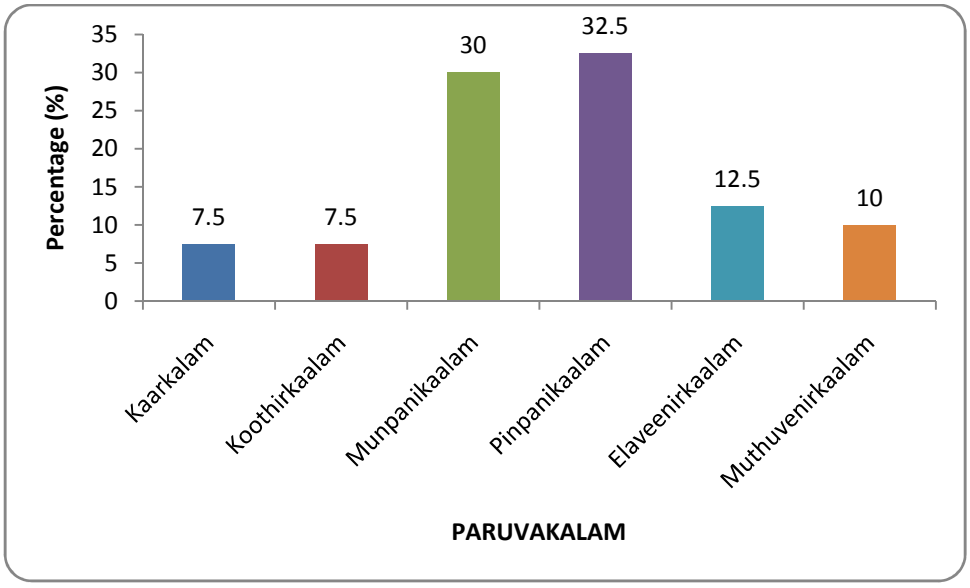
Inference

Among the 40 patient, 40 cases were from the marutham.

6. Paruvakalam

Table 6. Illustrates the Paruvakalam

S.no	Paruvakalam	Month	No. Of patients	Percentage(%)
1	Kaarkalam	Avani-puratasi (15 aug – 14 oct)	3	7.5
2	Koothirkaalam	Ippasi-karthigai (15 oct – 14 dec)	3	7.5
3	Munpanikaalam	Margazhi-thai (15 jan – 14 feb)	12	30
4	Pinpanikaalam	Maasi-panguni (15 mar – 14 apr)	13	32.5
5	Elaveenirkaalam	Chitthirai-vaigasi (15 may – 14 jun)	5	12.5
6	Muthuvenirkaalam	Aani-aadi (15 jul– 14 aug)	4	10



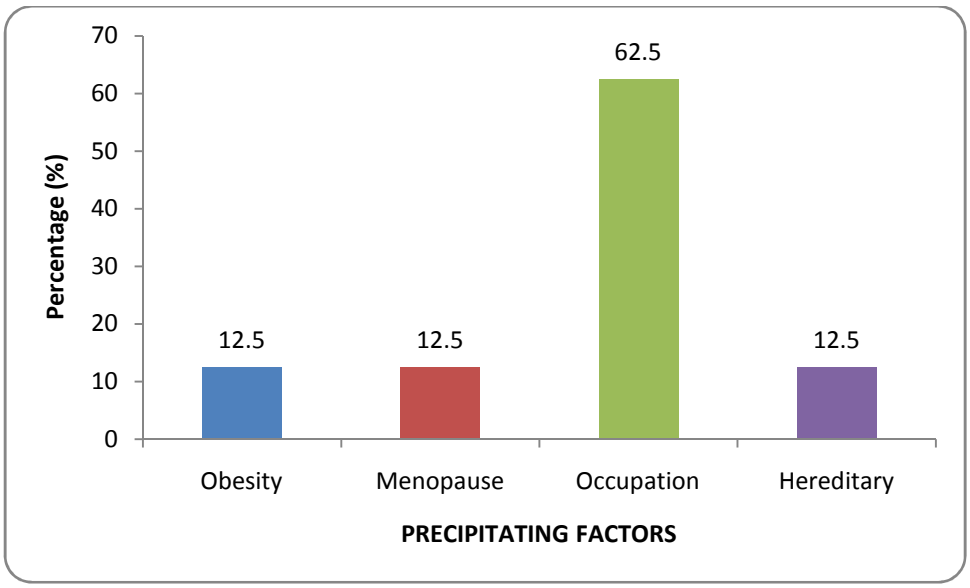
Inference

Among the 40 cases Munpanikaalam 30% cases, Pinpanikaalam 32.5% cases affected.

7. Distribution based on etiological factors

Table 7. Illustrates etiological factors

S.no	Precipitating factors	No. Of patients	Percentage(%)
1	Obesity	5	12.5
2	Menopause	5	12.5
3	Occupation	25	62.5
4	Hereditary	5	12.5
	total	40	100



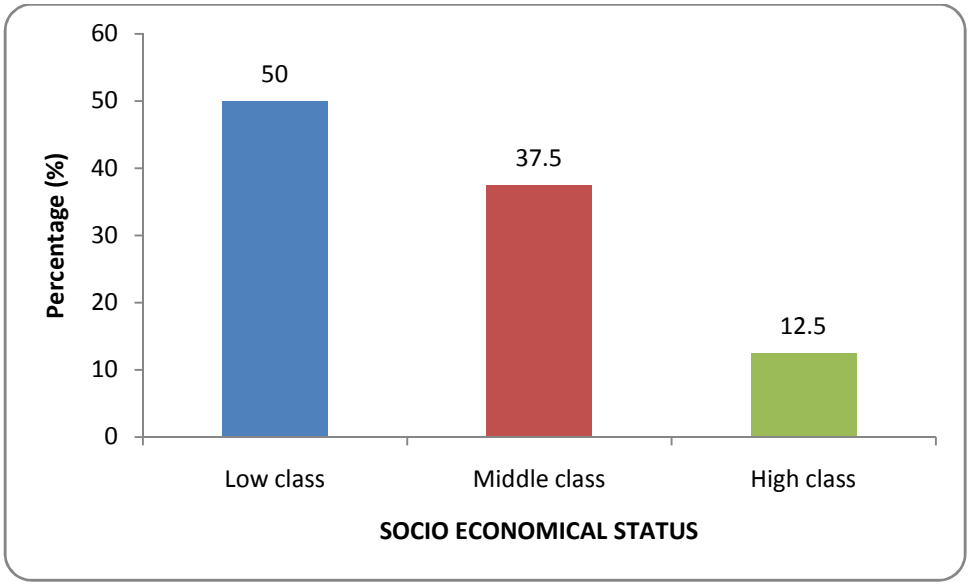
Inference

Among the 40 cases 25cases are occupationally affected. Obesity 5 patients affected. Menopause 5 patients affected. Heediatary 5patients affected.

8. Socio - Economical status

Table 8. Illustrate socio-economical status

S.no	Socio - Economical status	No. Of patients	Percentage(%)
1	Low class	20	50
2	Middle class	15	37.5
3	High class	5	12.5
	Total	40	100



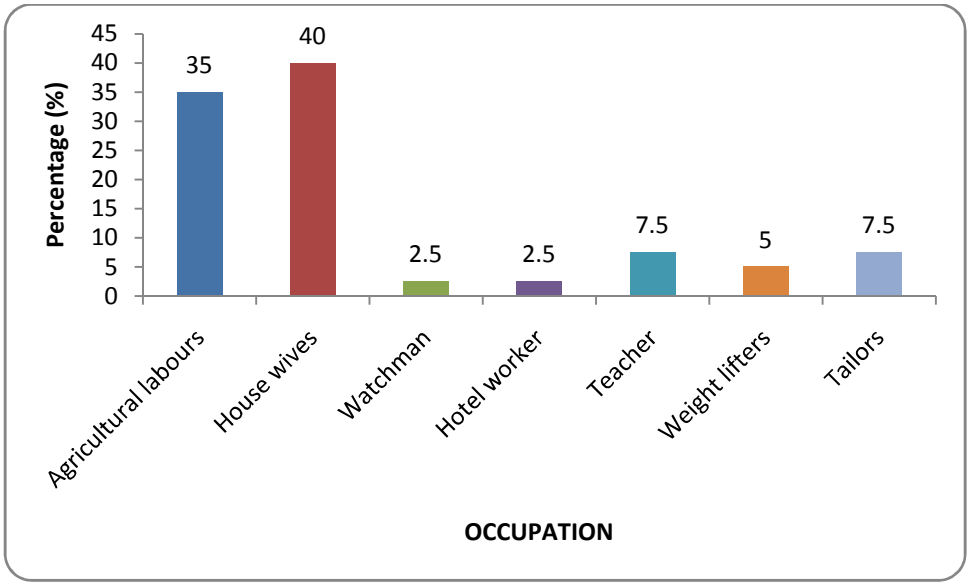
Inference

Among the 50% low socio – encomic status, 37.5% Middle Class, 12.5% High class

9. Occupation

Table.9 Illustrates occupation

S.no	Occupation	No. Of patients	Percentage(%)
1	Agricultural labours	14	35
2	House wives	16	40
3	Watchman	1	2.5
4	Hotel worker	1	2.5
5	Teacher	3	7.5
6	Weight lifters	2	5
7	Tailors	3	7.5



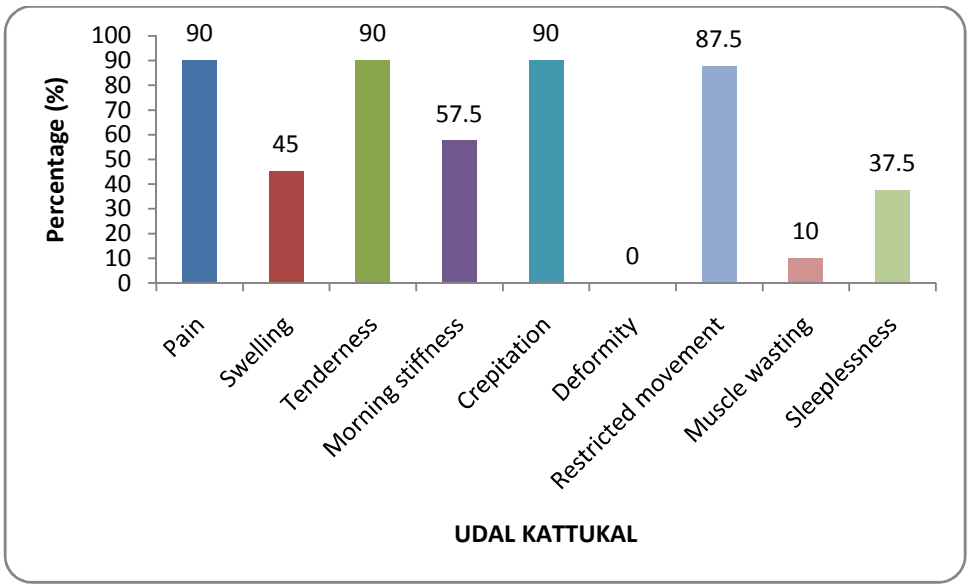
Inference

35% agriculatrual labours, 40% Housewives, 2.5% watchman & Hotel workers, 7.5% Teacher & Tailors, 5% Weight lifters.

10. Clinical manifestation

Table 10. Illustrates the clinical manifestation

S.no	Udal kattukal	No. Of patients	Percentage(%)
1	Pain	36	90
2	Swelling	18	45
3	Tenderness	36	90
4	Morning stiffness	23	57.5
5	Crepitation	36	90
6	Deformity	0	0
7	Restricted movement	35	87.5
8	Muscle wasting	4	10
9	Sleeplessness	15	37.5



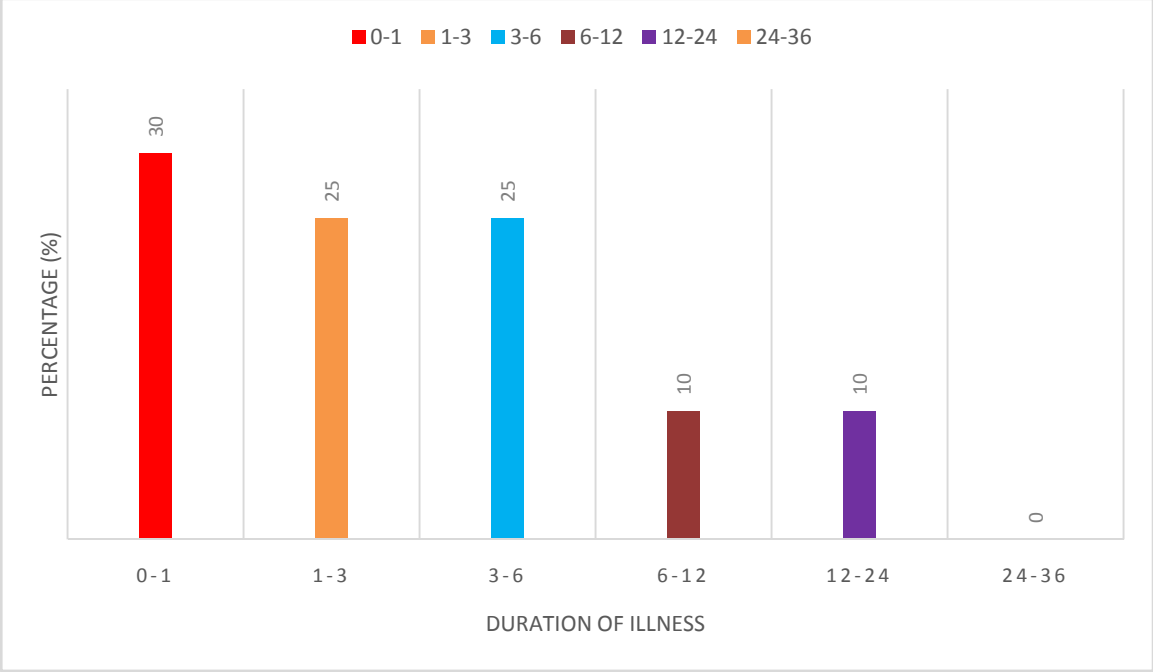
Inference

Among the 40 cases, pain 36 patients, swelling 18 patients, tenderness 36 patients, Crepitation 36 patients, restricted movement 35 patients, sleeplessness 15 patients affected.

11. Distribution according to the duration of illness

Table 11. Illustrates Distribution according to the duration of illness

S.no	Duration of illness (in months)	No. Of patients	Percentage(%)
1	0 - 1	12	30
2	1 - 3	10	25
3	3 - 6	10	25
4	6 - 12	4	10
5	12 - 24	4	10
6	24 - 36	-	0



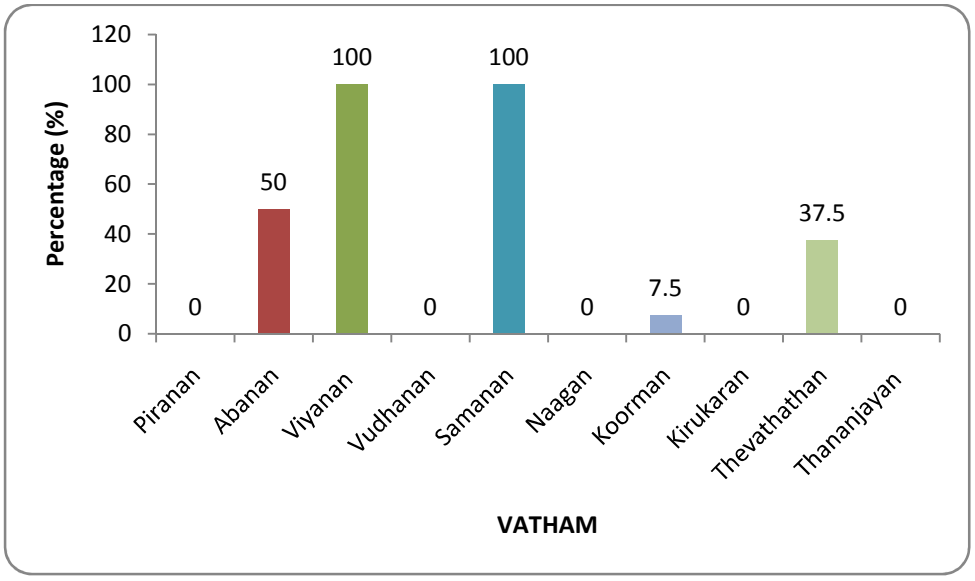
Inference

Among the 40 cases, 0-1 month 30%affected, 1-3 month 25% affected, 3-6 months 25% affected, 6-12 months 10% afftected, 12-24 months 10% afftected.

12. Disturbance in vatham

Table 12. Illustrates disturbance in vatham

S.no	Vatham	No. Of patients	Percentage(%)
1	Piranan	0	0
2	Abanan	20	50
3	Viyanan	40	100
4	Vudhanan	0	0
5	Samanan	40	100
6	Naagan	0	0
7	Koorman	3	7.5
8	Kirukaran	0	0
9	Thevathathan	15	37.5
10	Thananjayan	0	0



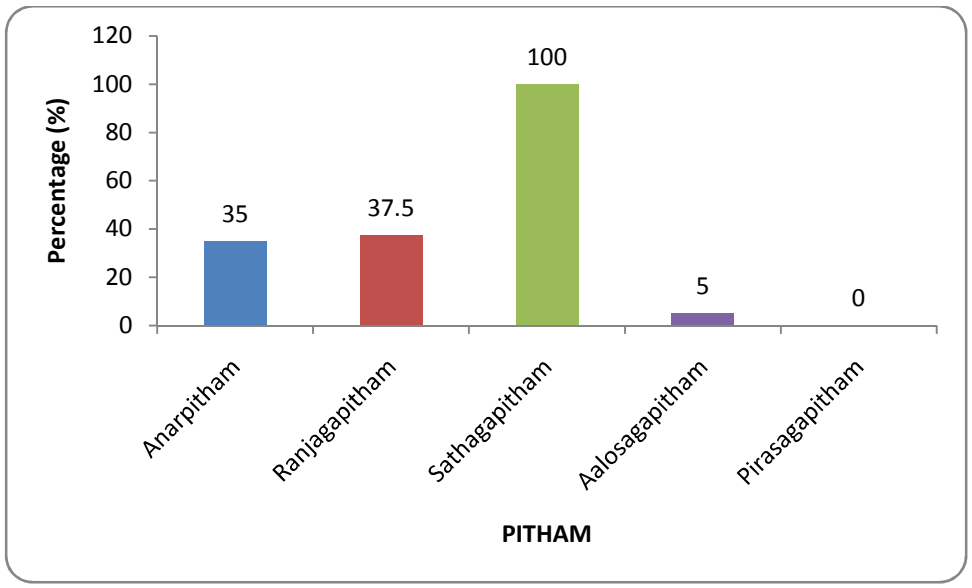
Inference

Among the 40 cases, Abanan 20 cases are affected, Viyanan, Samanan 40 cases are affected, Thevathathan 15 cases are affected.

13. Disturbances in pitham

Table 13. Illustrates disturbances in pitham

S.no	Pitham	No. Of patients	Percentage(%)
1	Anarpitham	14	35
2	Ranjagapitham	15	37.5
3	Sathagapitham	40	100
4	Aalosagapitham	2	5
5	Pirasagapitham	0	0



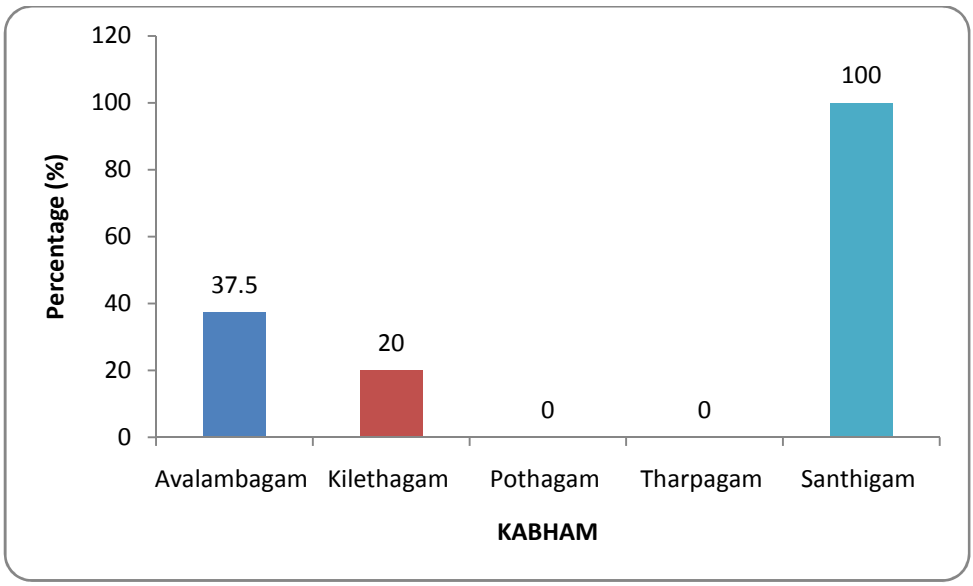
Inference

Among the 40 cases Sathagapitham 40 cases are affected, Anarpitham 14 cases are affected, Ranjagapitham 15 cases are affected.

14. Disturbances in kabam

Table 14. Illustrates disturbances in kabam

S.no	kabam	No. Of patients	Percentage(%)
1	Avalambagam	15	37.5
2	Kilethagam	8	20
3	Pothagam	0	0
4	Tharpagam	0	0
5	Santhigam	40	100



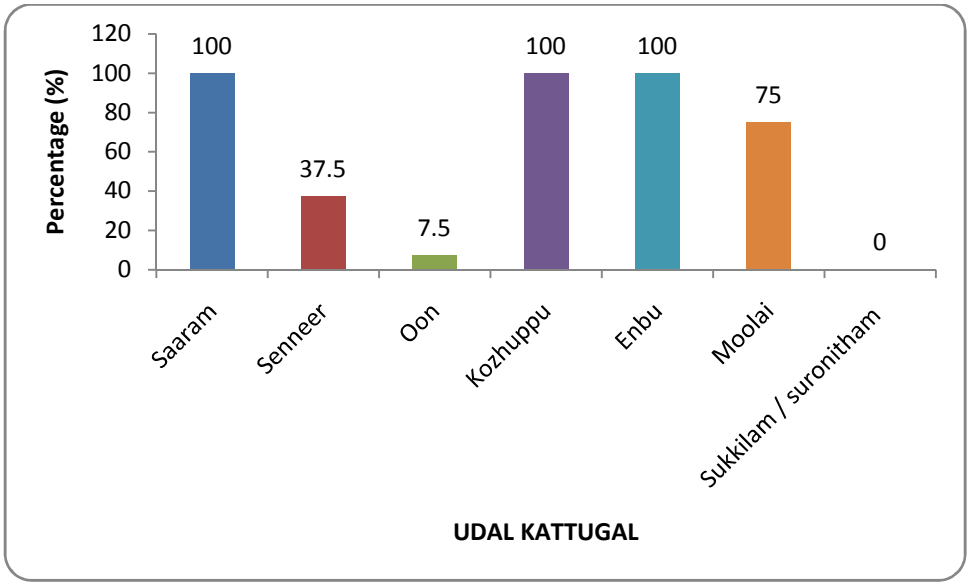
Inference

Among the 40 cases Avalambagam, Santhigam 40 cases are affected, Kilethagam 8 cases are affected.

15. Involvement of udal kattukal

Table 15. Illustrates the involvement of udal kattukal

S.no	Udal kattukal	No. Of patients	Percentage(%)
1	Saaram	40	100
2	Senneer	15	37.5
3	Oon	3	7.5
4	Kozhuppu	40	100
5	Enbu	40	100
6	Moolai	30	75
7	Sukkilam / suronitham	0	0



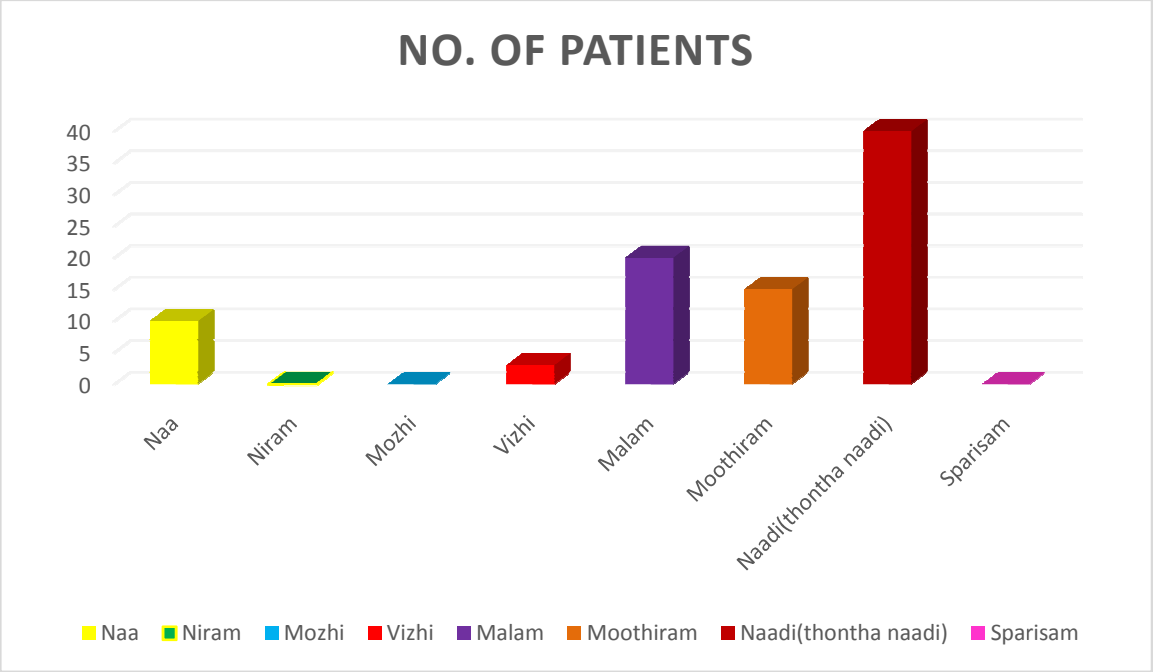
Inference

In all the cases Saaram, Kozhuppu, Enbu affected, Moolai 30 patients affected, Senneer 15 patients affected, Oon 3 patients affected.

16. Condition of envagai thervugal

Table 16. Illustrates the condition of envagai thervugal

S.no	Envagai thervugal	No. Of patients	Percentage(%)
1	Naa	10	25
2	Niram	0	0
3	Mozhi	0	0
4	Vizhi	3	7.5
5	Malam	20	50
6	Moothiram	15	37.5
7	Naadi(thontha naadi)	40	100
8	Sparisam	0	0



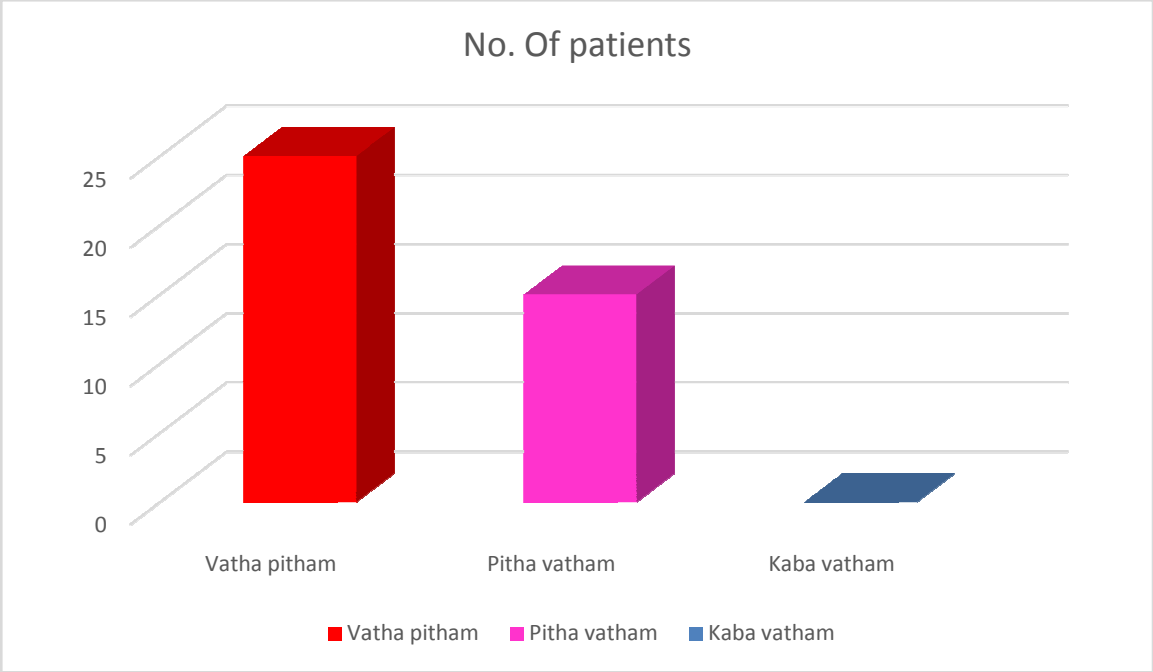
Inference

Among the 40 cases, Naadi 40 cases affected, malam 20 cases, Moothiram 15 cases, Naa 10 cases, vizhi 3 cases are affected.

17. NAADI

Table 17. Illustrates the pulse reading (naadi)

S.no	parameters	No. Of patients	Percentage(%)
1	Vatha pitham	25	62.5
2	Pitha vatham	15	37.5
3	Kaba vatham	0	0



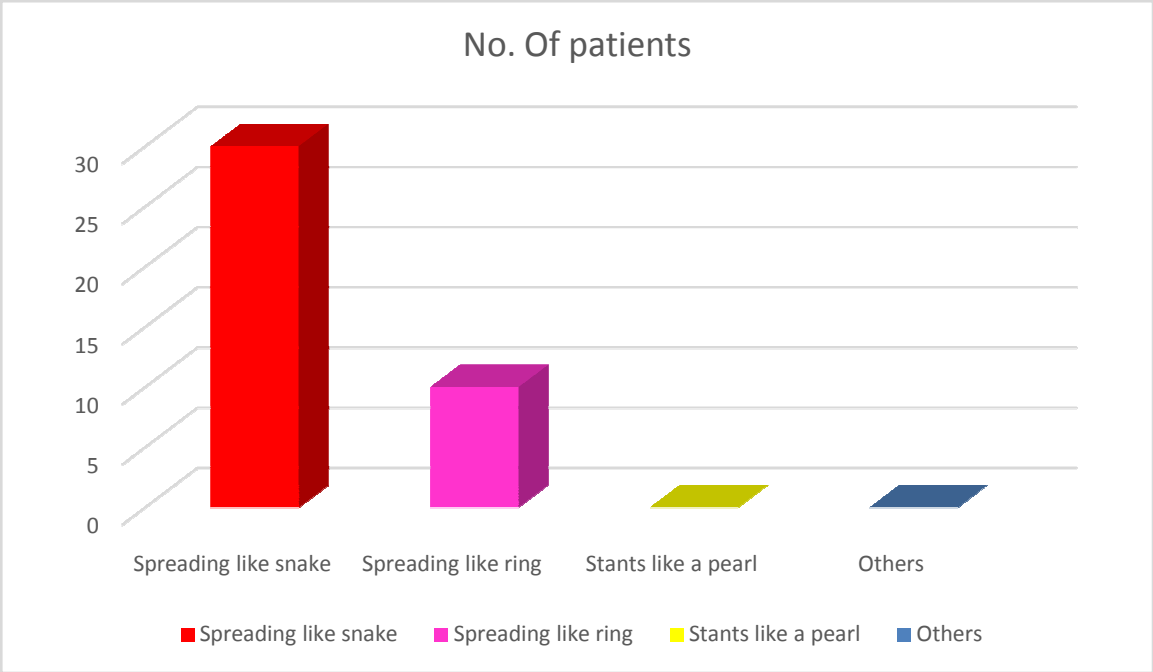
Inference

Among the 40 cases, Vathapitham 25 cases are affected, Pitha vatham 15 cases are affected.

18 NEIKURI

Table 18. Illustrates the neikuri analysis

S.no	Inference	No. Of patients	Percentage(%)
1	Spreading like snake	30	75
2	Spreading like ring	10	25
3	Stants like a pearl	0	0
4	Others	0	0
5	Total	40	100

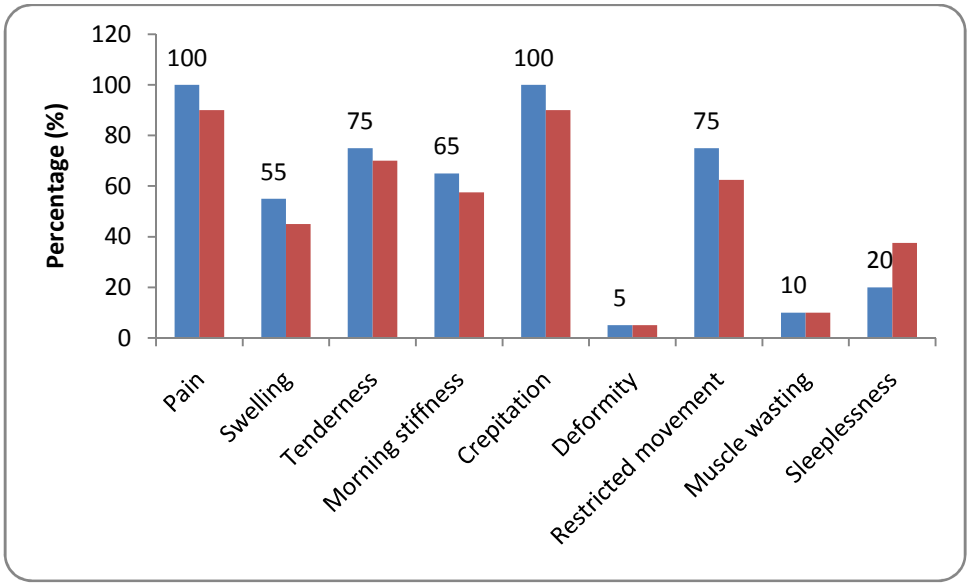


Inference

Among the 40 cases 30 cases are vathaneer, 10 cases are pithaneer.

Table 19. Progressive chart

S.no	Clinical feature	Before treatment		After treatment	
		No.Of cases	Percentage	No.Of cases	percentage
1	Pain	40	100	36	90
2	Swelling	22	55	18	45
3	Tenderness	30	75	28	70
4	Morning stiffness	26	65	23	57.5
5	Crepitation	40	100	36	90
6	Deformity	2	5	2	5
7	Restricted movement	30	75	25	62.5
8	Muscle wasting	4	10	4	10
9	Sleeplessness	8	20	15	37.5



Inference

Among the 40 cases, all of them had pain, tenderness, crepitation. restricted movement 30 patients, 22 patients had swelling, 26 patients had morning stiffness, 2 patients had deformity, 4 patients had muscle wasting and 8 patients had sleeplessness.

Table 20. Provocative chart

S.no	Clinical feature	Before treatment	
		No.Of cases	Percentage
1	Pain	40	100
2	Swelling	22	55
3	Tenderness	30	75
4	Morning stiffness	26	65
5	Crepitation	40	100
6	Deformity	2	5
7	Restricted movement	30	75
8	Muscle wasting	4	10
9	Sleeplessness	8	20

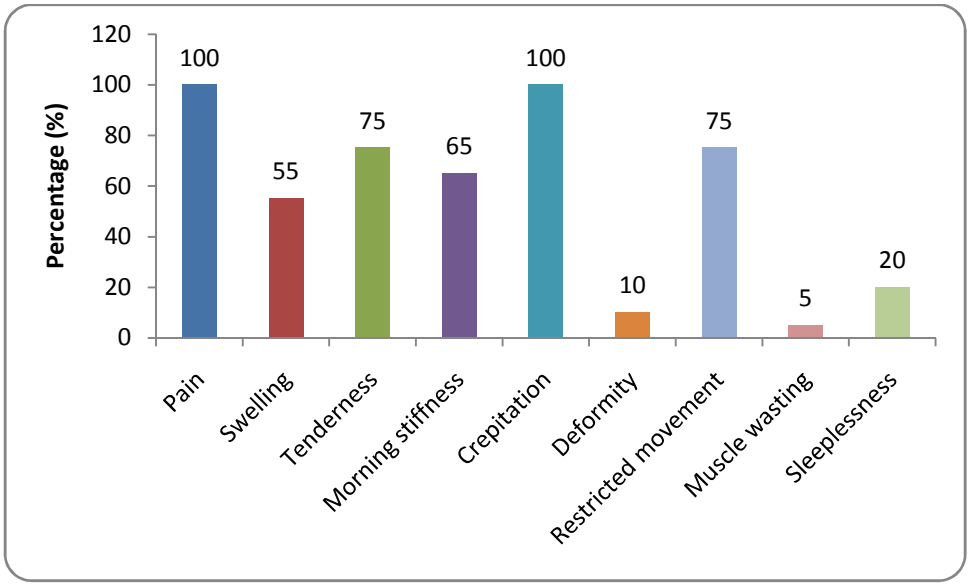


Table 21 Asesment of results outcome assessment scale

Clinical efficaly of the trial drugs were assessed by the following scales univers pain assessment scale Mccaffiry et at.1993.

a) 0- No pain
b) 1-3 Mild Pain
c) 4-6 Moderate pain
d) 7-10 Severe pain

A. Assesment of curative effects in knee osteoarthiritis patients treated with Trial Drugs (Internal and external medicine)

Symptoms	**Initial reading**		**Finisal reading**	
	No. of cases	**Precentage**	**No. of cases**	**Precentage**
No pain	0	0	10	50
Mild	5	25	6	30
Moderate	6	30	2	10
Severe	9	45	2	10

Inferance:

Among the patients who were selected for treating alone with drugs. 9 of them had severe symptoms and remaining 5 patients hadmid symptoms. But after treatment only 2 had severe symptoms, 2 had moderate symptoms. 6 had mild symptoms and 10 had no clinical masiferstaion.

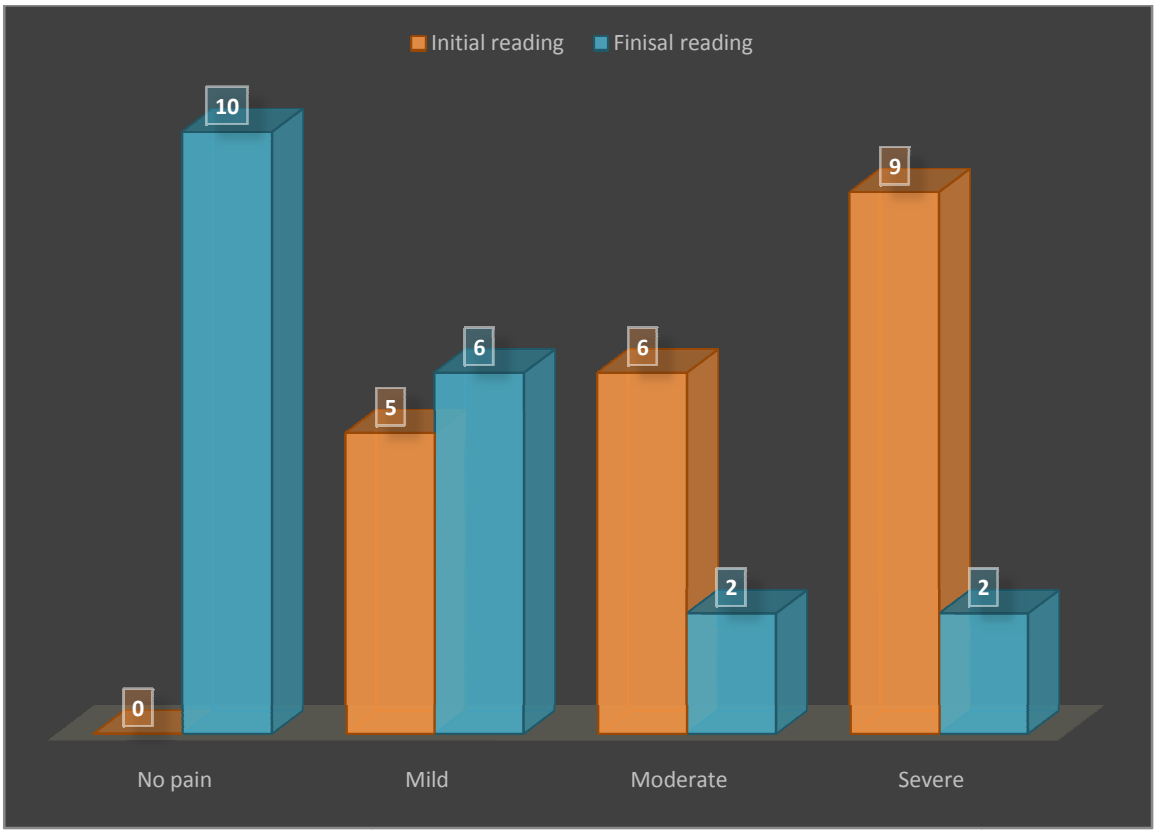
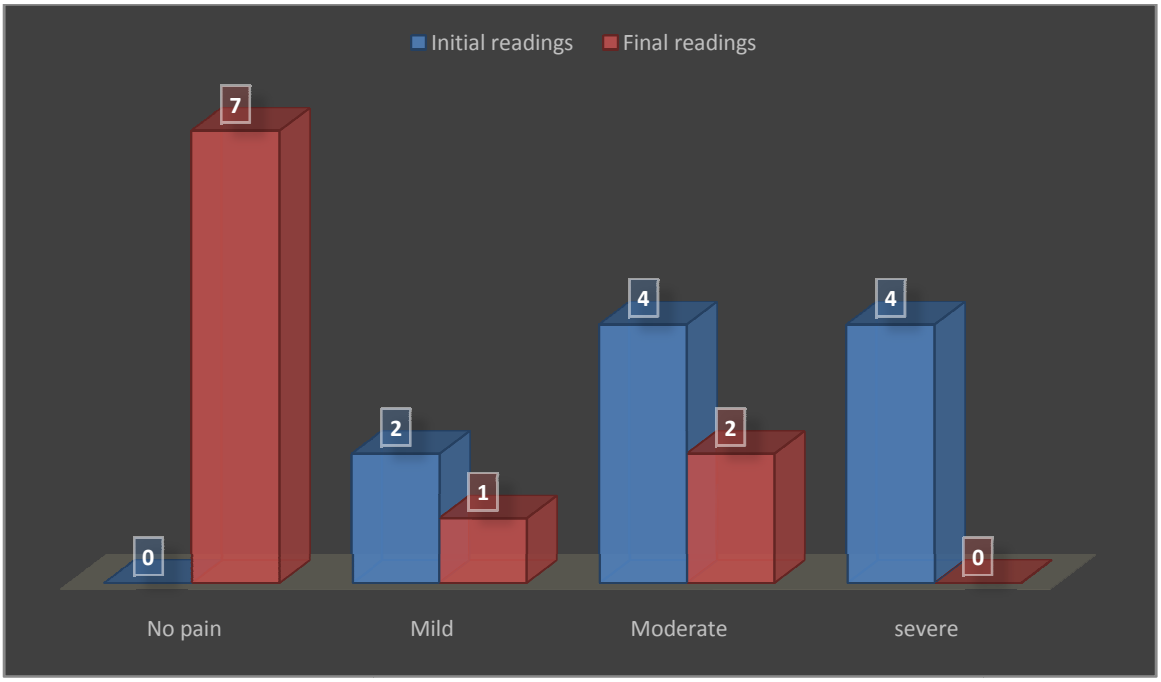

Initial reading
Finisal reading
10
0
6
5
6
2
9
2
No pain
Mild
Moderate
Severe

Table 22. Assessment of curative effects in Osteo arthritis patients treated with trail drugs along with complimentary therapy (Thokkanam)

symptoms	Initial readings		Final readings	
	No of patients	percentage	No of patients	Percentage
No pain	0	0	7	70
Mild	2	10	1	10
Moderate	4	40	2	20
severe	4	40	0	0

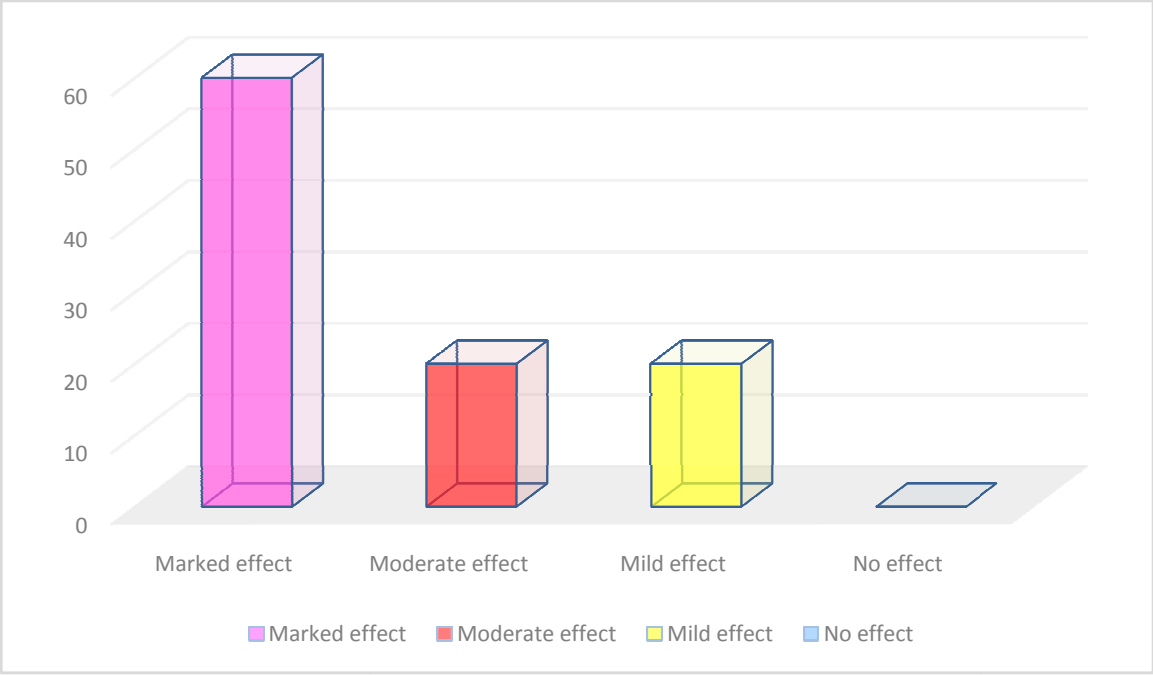


Inference

Among the 40 patients, who wre selected for treatin both trial drugs and Thokkanam 4 of them senere symptoms, 4 had moderate symptoms and the remaining 2 patients had mild symptoms. But after treatment 7 had no clinical manifestation 1 had only mild symptoms and remaining 2 had moderate symptoms no cases reported to have severe symptoms.

Table 23. Effect of trail drug along with complementary therapy (Varmam)

S.no	Effect of therapy	No. Of patients	Percentage(%)
1	Marked effect	6	60
2	Moderate effect	2	20
3	Mild effect	2	20
4	No effect	0	0

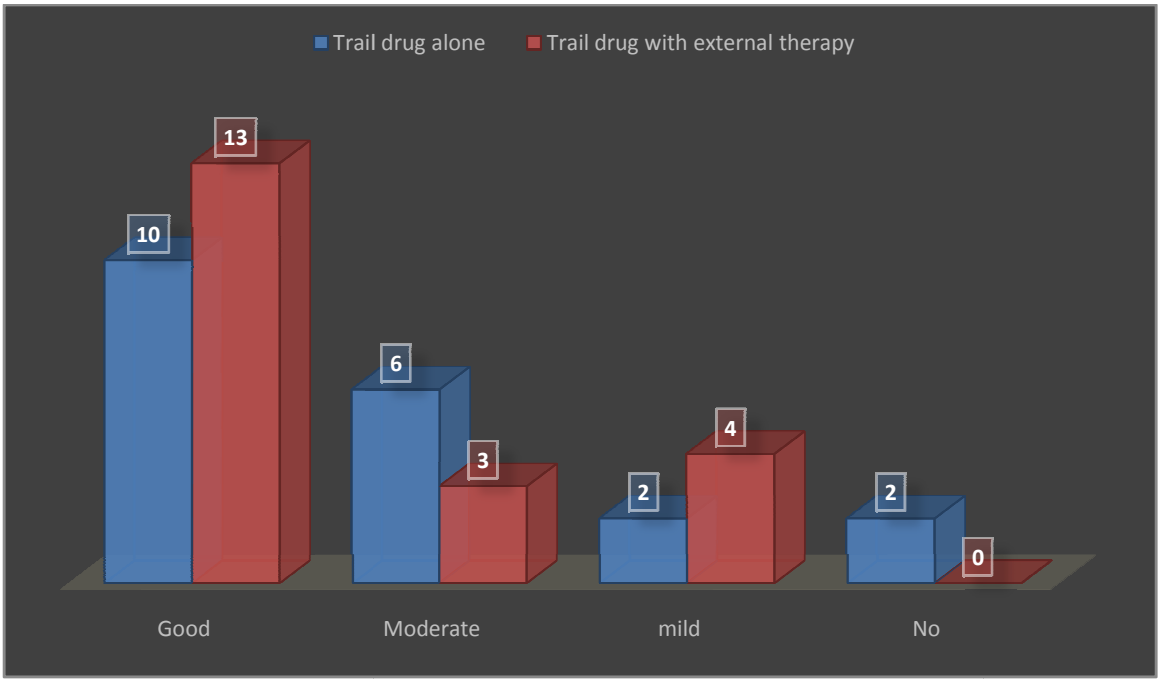


Inference

By treating both trial drug & complementary theraphy 60% had good improvement, 20% of patients had moderate improvement and 20% had mild improvement no were reported Nil.

Table 24. Comparison between effective of trail drug and trail drug with complementary therapies

S.no	Effect of therapy	Trail drug alone		Trail drug with external therapy	
		No.Of cases	percentage	No.Of cases	percentage
1	Good	10	50	13	65
2	Moderate	6	30	3	15
3	mild	2	5	4	20
4	No	2	5	0	0

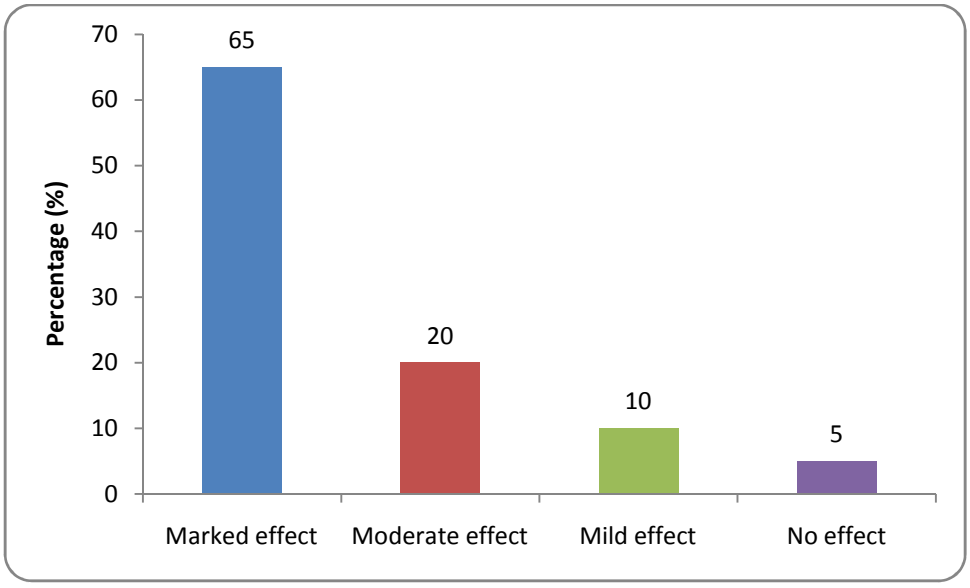


Inference

From the above results it clearly shows that trial drug with external therapy gives a best when compared to give trial drug above.

Table 25. Effect of therapy

S.no	Effect of therapy	No. Of patients	Percentage(%)
1	Marked effect	26	65
2	Moderate effect	8	20
3	Mild effect	4	10
4	No effect	2	5



Inference

Among the 40 cases, 65% are marked effect, 20% are moderate effect, 10% are mild effect, 5% had no effect.

MEASURMENT OF THE KNEE JOINT

S.NO	OP NO/IP NO	NAME	AGE/SEX	RT	LT	RT	LT
1	11024	PACKIYAM	50/F	34	32	32.5	29
2	24849	VALLIAMMAL	58/F	31	34	31	31.5
3	31395	GOPALDURAI	49/M	34	36	30.5	32
4	66178	LATHA	55/F	33	31.5	31	30
5	26435	DANIEL	60/M	37.5	35	33	33
6	24852	MURUGAN	59/M	39	36.5	36	34
7	22203	JANAKI	52/F	34	32	31.5	29.5
8	110409	LAKSHMI	60/F	37	36	33.5	34
9	31372	SAKUNTHALA	56/F	35	38	32	32
10	67248	CHITRA KOMU	38/F	33	31	30	29
11	3307	ESAKKI THE VAR	60/M	31	31	29	29
12	3104	SUBBIAH	60/M	39	40	39	39
13	478	VANAMAMALAI	60/M	30	32	30	31
14	918	MADATHI	60/M	38	37	36	35
15	3308	PONTHAI	57/F	35	35.5	34	34.5
16	919	CHELLAMMAL	45/F	39	38	37	38.5
17	3318	GOWRI	60/F	33	33.5	32	32
18	398	VASUKI	39/F	35	35	34	34.5
19	374	MUNIYANDI	60/M	38	37	36	35
20	3256	LAKSHMANAN	58/M	33	33.5	32	32
21	27	MANNICKAVEL	60/M	31	30	30.5	29
22	506	MARY	54/F	29	32	29	30

INFERENCE

Knee joint swelling is reduced opproximately 1-2cm after treatment

OP CASES CLINICAL IMPROVEMENT

S.NO	OP NO	NAME	AGE/ SEX	OCCUPATION	DATE OF ADMISSON	DATE OF DISCHARGE	TOTAL NO OF DAYS TREATED	RESULTS
1	22203	JANAKI	52/F	HOUSE WIFE	06-03-2018	28-03-2018	22 DAYS	GOOD
2	35300	KAMALAM	60/F	HOUSE WIFE	18-04-2018	09-05-2018	23 DAYS	GOOD
3	11024	PACKIYAM	50/F	TEACHER	13-12-2017	17-01-2018	34 DAYS	MODERATE
4	26580	SUBBULAKSHMI	45/F	TEACHER	19-03-2018	11-04-2018	22 DAYS	GOOD
5	67248	CHIDHRAKOMU	38/F	TAILOR	07-08-2017	28-08-2017	21 DAYS	GOOD
6	2053	KANNAMAL	53/F	HOUSE WIFE	05-01-2018	05-02-2018	31 DAYS	MILD
7	110404	GANESHWARI	45/F	TAILOR	14-12-2017	19-01-2018	35 DAYS	MILD
8	31372	SAKUNDALA	56/F	TEACHER	04-04-2018	26-04-2018	23 DAYS	GOOD
9	110409	LAKSHMI	60/F	HOUSE WIFE	14-12-2017	11-01-2018	27 DAYS	GOOD
10	66178	LATHA	55/F	HOUSE WIFE	03-08-2017	21-08-2017	18 DAYS	GOOD
11	24849	VALLIAMMAL	58/F	HOUSE WIFE	14-03-2018	05-04-2018	20 DAYS	GOOD
12	20034	ARULAPPAN	50/M	FARMER	02-03-2018	27-03-2018	25 DAYS	MODERATE
13	29608	GURUSAMY	60/M	FARMER	29-03-2018	20-04-2018	28 DAYS	GOOD
14	26435	DANIEL	60/M	WEIGHT LIFTER	19-03-2018	13-04-2018	24 DAYS	GOOD
15	67249	SUBRAMANIAN	52/M	FARMER	07-08-2017	28-08-2017	22 DAYS	GOOD
16	1500	PERIYASAMY	60/M	FARMER	04-01-2018	31-01-2018	27 DAYS	MODERATE
17	24852	MURUGAN	59/M	FARMER	14-03-2018	05-04-2018	21 DAYS	GOOD
18	31395	GOPALDURAI	49/M	FARMER	04-04-2018	26-04-2018	22 DAYS	GOOD
19	112031	CLARAMARY	43/F	HOUSE WIFE	09-12-2017	22-01-2018	43 DAYS	NO REACTION
20	112299	RAMA	54/F	HOUSE WIFE	20-12-2017	24-01-2018	34 DAYS	MODERATE

IP CASES CLINICAL IMPROVEMENT

S.NO	IP NO	NAME	AGE/SEX	OCCUPATION	DATE OF ADMISSION	DATE OF DISCHARGE	DAYS	RESULTS
1	3307	ESAKKITHEVAR	60/M	FARMER	18-12-2017	11-01-2018	24 DAYS	GOOD
2	3256	LAKSHMANAN	58/M	WEIGHT LIFTER	12-12-2017	24-12-2017	12 DAYS	GOOD
3	3089	MADASAMY	56/M	HOTEL WORKER	20-11-2017	12-12-2017	22 DAYS	GOOD
4	3105	POOLIAH	55/M	FARMER	22-11-2017	11-12-2017	20 DAYS	MODERATE
5	3104	SUBBIAH	60/M	FARMER	22-11-2017	11-12-2017	20 DAYS	GOOD
6	718	ADAIKALAM	55/M	FARMER	15-03-2018	10-04-2018	26 DAYS	MODERATE
7	611	MURUGAN	60/M	FARMER	07-03-2018	05-04-2018	29 DAYS	MODERATE
8	478	VANAMAMALAI	60/M	FARMER	21-02-2018	16-03-2018	24 DAYS	GOOD
9	432	SHANMUGAM	45/M	TAILOR	17-02-2018	09-03-2018	21 DAYS	GOOD
10	27	MAANIKAVEL	60/M	WATCH MAN	04-01-2018	02-02-2018	29 DAYS	MODERATE
11	374	MUNIYANDI	60/M	FARMER	13-02-2018	28-02-2018	16 DAYS	GOOD
12	918	MADATHI	60/F	HOUSE WIFE	05-04-2018	24-04-2018	20 DAYS	GOOD
13	919	CHELLAMAL	45/F	HOUSE WIFE	05-04-2018	24-04-2018	20 DAYS	GOOD
14	3308	PONTHAI	57/F	HOUSE WIFE	18-12-2017	06-01-2018	20 DAYS	GOOD
15	3318	GOWRI	60/F	HOUSE WIFE	19-12-2017	28-12-2017	10 DAYS	MODERATE
16	3391	THANGAMMAL	60/F	HOUSE WIFE	30-12-2017	18-01-2018	20 DAYS	GOOD
17	338	VASUKI	39/F	HOUSE WIFE	15-02-2018	14-03-2018	28 DAYS	MODERATE
18	506	MARY	54/F	HOUSE WIFE	25-02-2018	16-03-2018	20 DAYS	GOOD
19	665	SHANMUGASUNDARI	32/F	HOUSE WIFE	12-03-2018	27-03-2018	16 DAYS	GOOD
20	2114	MUNIYASAMY	60/M	FARMER	25-07-2017	10-08-2017	16 DAYS	GOOD

BLOOD INVESTICATION BEFORE AND AFTERTREATMENT-OP & IP PATIENTS

S.NO	IP.NO	TC		DC								ESR		BL.SUGAR				BI. UREA		Se.Cr	
														F		PP					
		BT	AT	N		L		E		Hb		BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
				BT	AT	BT	AT	BT	AT	BT	AT										
1	3307	8600	8500	65	66	28	28	7	5	12	12.5	11l22	15l25	89	92	83	105	25	27	0.5	0.9
2	3256	7500	7400	67	65	27	29	8	6	13	15	13l27	10l20	80	95	100	103	22	20	0.8	0.8
3	3089	8800	8500	66	66	25	27	5	3	12	11	7l18	7l20	93	85	98	95	29	31	0.5	0.9
4	3105	6800	6600	68	65	29	28	6	7	14	15	15l30	14l25	87	85	98	90	32	33	0.2	0.2
5	718	8600	8400	69	67	27	27	4	6	15	15	20l45	20l30	78	85	96	102	28	26	0.3	0.2
6	3104	7800	7900	67	65	25	24	5	5	13	12	10l20	7l15	87	82	110	108	29	31	0.5	0.3
7	611	8700	8500	65	65	28	24	5	3	10.5	9	20/35	30l40	78	82	95	105	27	28	0.3	0.2
8	478	8800	8000	69	67	27	26	4	2	13.5	14	17l33	25l50	90	84	95	100	29	27	0.2	0.4
9	432	7400	7300	70	66	29	28	5	6	15	16	10l20	20l40	76	87	95	93	27	24	0.3	0.3
10	27	7200	7600	65	67	26	24	6	4	13	11..5	17l33	25l40	75	82	89	94	28	26	0.4	0.3
11	374	7800	7600	67	69	28	27	4	3	15	14	17l30	25/30	85	89	94	92	29	30	0.4	0.3
12	918	7600	7500	68	68	27	25	3	5	13	12	17/33	25/20	82	80	97	92	28	30	0.7	0.7
13	919	8300	8500	64	65	29	29	4	6	11	12	35/60	28l40	74	80	85	89	26	27	0.7	0.6
14	3308	8400	8700	63	62	28	29	5	3	13	12	20/35	20/15	86	84	90	95	28	25	0.6	0.7
15	3318	8200	8300	67	65	24	28	3	4	14	13	23/44	20/40	85	78	93	87	27	26	0.6	0.6
16	3391	8600	7600	65	62	26	29	4	2	14	11	27/32	22/35	79	83	94	85	29	30	0.8	0.7
17	398	6800	6700	66	66	26	27	8	5	13	14	2o/35	20/40	80	95	98	87	31	27	0.8	0.8
18	506	7800	7900	68	65	26	25	5	6	13	15	13/27	25/30	93	85	98	102	28	26	0.7	0.6
19	665	7400	7600	69	67	29	28	6	7	14	16	23/30	25/30	87	82	93	98	28	27	0.5	0.9
20	2114	7400	7300	68	65	28	27	5	4	10.5	9	20/35	30/40	90	85	95	105	25	27	0.4	0.8

BLOOD INVESTICATION BEFORE AND AFTERTREATMENT-OP & IP PATIENTS

21	22203	7800	7600	67	69	28	27	4	3	15	14	17l30	20/30	85	89	94	92	29	30	0.4	0.6
22	35300	6800	6600	68	65	29	28	6	7	14	15	15l30	14l25	87	85	97	90	30	33	0.6	0.4
23	11024	8400	8700	63	62	28	29	5	3	13	12	20/35	20/15	86	84	90	95	28	25	0.6	0.5
24	26580	8800	8500	66	66	25	27	5	3	12	11	7l18	7l25	93	85	90	95	29	31	0.5	0.4
25	67248	7600	7500	68	68	27	25	3	5	13	12	17/33	25/20	90	82	97	92	28	30	0.6	0.7
26	2053	7200	7600	65	67	26	24	6	4	13	11..5	17l33	25l40	75	82	89	94	28	26	0.6	0.7
27	110404	8200	8300	67	65	24	28	3	4	14	15	35/60	28l40	74	80	85	89	26	27	0.6	0.7
28	31372	8300	7900	64	66	29	29	4	6	11	12	35/60	28l40	74	82	85	89	26	27	0.9	0.6
29	110409	7800	8000	69	67	27	26	4	2	13.5	14	17l33	25l50	90	84	95	100	29	27	0.9	0.8
30	66178	7400	7300	70	66	29	28	6	7	15	16	10l25	20l40	76	87	95	93	27	24	0.8	0.7
31	24849	6800	6700	66	66	26	27	8	5	13	14	2o/35	20/40	80	95	98	87	31	27	0.9	0.6
32	20034	7800	7900	68	65	26	25	5	6	13	15	13/27	25/30	93	85	98	102	28	26	0.3	0.5
33	29608	7400	7600	69	67	29	28	6	7	14	16	24/30	25/30	87	82	93	98	28	27	0.6	0.7
34	26435	7600	7300	70	67	29	28	5	6	15	16	10l20	20l40	76	87	95	93	27	24	0.5	0.8
35	67249	8400	8700	63	62	28	29	5	3	13	12	20/35	20/15	86	84	90	95	28	25	0.4	0.6
36	1500	7600	7500	68	68	27	25	3	5	13	12	17/33	25/20	90	82	97	92	28	30	0.6	0.5
37	24852	7200	7900	65	68	26	24	5	4	13	11..5	17l33	25l40	75	82	89	94	28	26	0.5	0.4
38	31395	8800	8500	67	66	25	28	5	3	12	11	7l18	7l25	90	85	92	95	29	31	0.3	0.5
39	112031	7800	7600	67	69	28	27	4	3	15	14	17l30	20/30	85	89	94	92	29	30	0.8	0.7
40	112299	6800	6600	68	65	29	28	6	7	14	15	15l30	14l25	87	85	97	90	30	33	0.4	0.6

URINE AND MOTIONS EXAMINATION BEFORE AND AFTER TREATMENT- OP&IP PATEINTS

S.NO	IP.NO	URINE							
		BEFORE TREATMENT				AFTER TREATMENT			
		ALBUMIN	SUGAR	DEPOSITS		ALBUMIN	SUGAR	DEPOSITS	
				PUS CELLS	EPI CELLS			PUS CELLS	EPI CELLS
1	3104	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
2	3307	TRACE	NIL	1--3	2--3	TRACE	NIL	0-1	0-1
3	3256	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
4	3089	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
5	3105	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
6	506	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
7	718	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
8	611	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
9	478	TRACE	NIL	2--3	1--2	TRACE	NIL	0-1	0-1
10	432	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
11	27	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
12	374	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
13	918	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
14	919	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
15	3308	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
16	3318	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
17	3391	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
18	398	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
19	665	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
20	2114	TRACE	NIL	2--3	4--5	NIL	NIL	NAD	NAD

S.NO	OP.NO	URINE							
		BEFORE TREATMENT				AFTER TREATMENT			
		ALBUMIN	SUGAR	DEPOSITS		ALBUMIN	SUGAR	DEPOSITS	
				PUS CELLS	EPI CELLS			PUS CELLS	EPI CELLS
21	22203	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
22	35300	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
23	11024	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
24	26580	TRACE	NIL	2--3	3--4	NIL	NIL	NAD	NAD
25	67248	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
26	2053	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
27	11O404	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
28	31372	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
29	110409	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
30	66178	TRACE	NIL	2--3	1--2	TRACE	NIL	0-1	0-1
31	24849	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
32	20034	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
33	29608	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
34	26435	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
35	67249	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
36	1500	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
37	24852	TRACE	NIL	1--2	1--2	NIL	NIL	NAD	NAD
38	31395	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
39	112031	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD
40	112299	NIL	NIL	NAD	NAD	NIL	NIL	NAD	NAD

DISCUSSION

Osteoarthritis is a chronic progressive degenerative degenerative disease affecting mainly the articular cartilage of the big weight bearing joints of the body. It is the most common form of arthritis characterized by subchondral selerosis and changes in thesoft tissues including the synovial membrane joint capsule ,ligaments and musle , synovial inflammation.Knee pain is the activities and drives them to consult a doctor .

Osteoarthritis is a major funder to functional impairment and reduced independence in older adaults so with this background , the disease osteoarthritis in knee taken for the study.

As a search in fulfilling the prime aim of this study the following trail drugs for treating the disease azhal keel vaayu were selected

1.PANJA LAVANA PARPAM as the internal medicine

2.LAHU VAADHA KESARI THYLAM as the external medicine

Age distribution

The statistical study shows high incidence of Azhal Keel vayu in the age group between 31-60 years as it is one of the degenerative disease.

Kaalam Disdribution

Most of the patients belong to pithakalam.

This information is bestowed by our siddhars as the wordings.

“வேண்டா ஐம்பதாம் வயதுதன்னில்

விரைந்துபிருதிவியில் அப்புமேவும் பாரே”.

The target sites affected in azhal keel vayu are generally bones, muscles, nerves, hairs, blood, urine, fat which are the components of appu and prithiviboothas (Appu+ prithivi = kabam responsible for destruction). Hence they begin to degenerate above fifty.

Sex distribution

There is a slight variation in the male and female ratio and it is noted obviously in the study. From the above mentioned tabulation among the 40 patients. 25 patients male and 15 patients were female .

Thinai

About 100% of patients from maruthanilam. It may be due to altered food, lifestyle,habits etc.

Seasonal distribution

Most of the patients came during, Pinpani kaalam, Munpani kaalam.

Etiological factors

Majority of patients of the Azhal keel vaayu was caused mainly (62.5%) due to the nature of occupation, obesity 12.5% menopause condition 12.5% Hereditary 12.5%.

Socio-economic status

During the study, 95% of cases were middle class and 5% of lower class.

Occupational status

The rate of incidence is higher in occupational group which includes Agricultural labour (35%) and house wifes(40%) Teacher(7.5%), Tailors(7.5%), Weight lifters(5%), others(5%). Due to house wife are mostly affected.

Clinical Manifestations

From the tabulated data all the patients had pain, tenderness,crepitation were their predominating symptoms, Then morning stiffness (70%) were found to be predominant next to the above symptoms.

Duration of illness

Most of the patient with the disease Azhal keel vadham reflected its symptoms over a period of 0-1 month which was confirmed during the history taking while 30% of the patients reported the data.

Derangement in vatham

Viyanan and Samanan was affected in all 40 cases (100%).Abanan affected in 20 cases 20%

Disturbances in Pitham

Mostly Sathagapitham was affected in all 40 cases (100%).

Disturbances in Kabham

Almost Santhigam was affected in all 40 cases (100%).

Udal Thathukkal

In this study the patients was affected with seven thathus are affected.

Envagai Thervugal

In this study thontha naadi was noted in all 40 cases, malam was affected in 20% of cases and In naadi 60% were vatha pitha naadi, 40% were pitha vatha naadi.

Investigation

Laboratory investigations were done in all the cases before and after treatment. The significant variation occurs in parameters like ESR and HB, while other parameters have insignificant variation.

Pre clinical studies

The Bio chemical analysis of "PANJA LAVANA PARPAM" contains Calcium, Sulphate, Chloride, ferric iron, Ferrous iron, Unsaturated compound, Amino acid.

The phytochemical study of "PANJA LAVANA PARPAM" had revealed the presence of calcium, ferrous iron, tannic acid, unsaturated compound, reducing sugar.

Pharmacological studies

The pharmacological studies done in PANJA LAVANA PARPAM revealed the presence of actions such as

1. Anti – inflammatory action
2. Analgesic activity.

Toxicity studies

Acute toxicity studies in rats for "PANJA LAVANA PARPAM " revealed that it has no toxicity effect.

Treatment

The treatment was aimed to retain the dearranged thoshas and providing relief from symptoms. Before treatment the patients were advised to take vellai ennai 15ml with hot water during morning for first day of treatment.From the second day onwards Internal medicine PANJA LAVANA PARPAM 5gm two times a day after food and LAHU VADHA KESARI THYLAM is given as external.

At the time of treatment the patients were advised to follow pathiyam and specifically advised to avoid foods which increase vadha. Along with the course of treatment the complementary therapies like Thokkanam and Ottradam therapy were given additionally to some of the patients.

The outcome of this study is mainly assessed by reduction in pain in Knee joint. Increased range of reduction of restricted movements and improvement in quality of life universal pain assessment scale was also used to detect proper outcome. No adverse effect was noted for both internal and external medicine along with the course of treatment.

SUMMARY

40 cases with Azhal keel vayu were diagnosed clinically based on yugi 800 and admitted in the inpatient ward and outpatient ward of post graduate department of sirappu maruthuvam, Government Siddha Medical College Hospital, palayamkottai and treated by the trial medicines.

- Laboratory diagnosis of Azhal keel vayu was done by siddha diagnostic principles and endorsed by modern methods of investigations.
- The various siddha aspects of examination of the disease were carried out and were recorded in the proforma.
- The trial medicine chosen for both internal and external treatments were Panja lavana parpam – 5.1 gms days in two divided doses for Twenty four days as per the severity of the diseases,Lahu vadha kesari thylam (External)
- Before starting the treatment careful detailed history was carried out and recorded for the forty selected cases.
- During the period of treatment all the patients were put under pathiyam (A specific dietary regimen)
- A periodical laboratory investigation was made for all the cases along with the radiological investigations.
- The observations made during the clinical study shows that the main internal drug Panja lavana parpam is clinically effective.
- Though there was appreciable clinical improvement, there was not much remarkable radiographic changes.

The action of external application Lahu vadha kesari thylam with Thokkanam and Ottradam is also quite remarkable.

CONCLUSION

All 40 patients (20 OPD and 20 IP) 10 patients with trial medicines and Massage, 10 with ottradam along with trial medicines). were treated for this dissertation work with Panja lavana parpam 5gm/day in two divided doses and Lahu vadhakesari thylam (externally)

In the pre clinical study pharmacological evaluation of the trial drug shows.

- Significant analgesic effect
- Significant Anti inflammatory effect (Internal medicine)

In the preclinical study toxicity study of "PANJA LAVANA PARPAM" shows that the trial drug had no acute toxicity.

The overall effect of the clinical trial drug are

Marked effect - 65%

Moderate effect – 20%

Mild effect - 10%

No effect - 5%

This result of the clinical trial illustrates the marked effect of the drugs and complementary therapy.

The trial drug PANJA LAVANA PARPAM and external Lahu vadha kesari thylam is effective. No adverse effects were noticed during the treatment period. So the trial medicine is safe and easily preparable medicine.

ANNEXURE –I

STANDARD OPERATING PROCEDURE FOR PREPARATION OF PANJA LAVANA PARPAM & LAHU VATHA KESARI THYLAM

SOURCE OF RAW DRUGS:

the required drugs for preparation of PANJA LAVANA PARPAM (INTERNAL) & LAHU VATHA KESARI THYLAM (External) are purchased from well reputed country shop and Raw drugs are authenticated by Medical botanist of govt. Siddha Medical College, Palayamkottai, then purified and the meicines are prepared in the Gunapadam laboratory of Govt. Siddha Medical College, Palaymkottai.

PROPERTIES OF THE TRIAL DRUG

INTERNAL MEDICINE:

1. PANJA LAVANA PARPAM

INGREDIENTS:

1. **PURIFIED KALL UPPU - 8.75 gram**
2. **PURIFIED KARI UPPU - 8.75 gram**
3. **PURIFIED INDUPPU - 8.75 gram**
4. **PURIFIED VALAYAL UPPU - 8.75 gram**
5. **PURIFIED VEDI UPPU - 8.75 gram**

S.NO	DRUG NAME	BOTANICAL NAME	PART USED
1	PIRANDAI	CISSUS QUADRANGULARIS	STEM
2	MURUNGAI	MORINGA OLEIFERA	BARK
3	KUPPAIMENI	ACALYPHA INDICA	WHOLE PLANT
4	NOCHI	VITEX NEGUNDO	LEAVES
5	KUMARI	ALOE VEERA	STEM

METHODS OF PURIFICATION

PURIFICATION OF RAW DRUGS:

1.KALL UPPU:

Kallu uppu dissolved in kaadi and filtered then dried in sunlight.

2.KARRIUPPU:

Karri uppu is dissolved in seven share of water or kaadi water is dissolved and filtered then dried and mix with lemon juice or butter milk and then dried in sunlight.

3.INDUPPU:

Induppu dissolved in kaadi and filtered then dried in sunlight.

4.VALAYALUPPU:

Valayal uppu dissolved in kaadi filtered then dried in sunlight.

5.VEDIUPPU:

Vedi uppu dissolved in kaadi filtered then dried in sunlight.

PIRANDAI :

Pirandai dissolved in Salt with Butter Milk filtered and dried in sunlight.

MURUNGAI:

Remove outer bark layer**.**

KUPPAIMENI :

Wash with river water.

NOCHI :

Wash with river water.

KUMARI:

Remove the horns and wash with river water.

METHOD OF PREPARATION

Purified salt are taken, pirandai, Murungai pattai, Nochi, Kuppaimeni, Kumari are herbal juice taken and mix to grind in kalvam for three hours. Then prepare that in villai form na done the seelai mann. Then burn with 10 varates pudam.

DOSE **:** 1 kazhanju (5.1 gram)

DURATION **:** 12 days to 24 days

ADJUVANT **:** ¼ Perungayam with Honey

REFERENCE **:** Athmaratchamirtham (page no – 511)

DRUGS STORAGE :

Parpam is mixed with ¼ perungayam with Honey is formation of mezhugu stored in a clean and dry container and it is dispensed to the patient in packets.

உப்பின் வகைகள்

1. கல்லுப்பு
2. இந்துப்பு
3. கறியுப்பு
4. வளையலுப்பு
5. வெடியுப்பு

உப்பின் பொதுக்குணம்

''அளத்திலுறை நல்லுப் பனல்வாதம் மாற்றுங்

களத்துநோய் தன்னைக் களையுங் - கிளைத்தகப

ஆசுடைய வல்லை நோய் அஷ்குன்மமும் போக்குங்

களசினியுள் மாதே கழறு''

விளக்கம்

உப்பினால் பித்தவாதம், கண்டக் கழலை, கபம், கல்லீரல் நோய், எண்வகைக்குன்மம் தீரும்.

கல்லுப்பு

இது கடற்குருவி என்றும் வழங்கப்படும்.

இவ்வுப்பு, கடலுக்குள் மலைபோலக் கட்டியாய்ப் பாறையாய் வளர்ந்து நிற்கும்.

சுத்தி

காடி தண்ணீரில் பிசுறி, பிறகு ஈரத்தைத் துணியில் துடைத்து வெயிலில் உலர்த்திக் கொள்ளவேண்டும்.

பொதுக்குணம்

ஐயமறுஞ்சூலை யரோசிபித்தஞ் சத்தியோடு

வெய்யபிணி யட்டகுன்மம் விட்டேகும் - பெய்வளையே

வாதமதி தாகம் மலக்கட்டும் போமுலகிற்

கோதறுகல் லுப்பைக் கொடு.

விளக்கம்

கபம், குத்தல், அருசி, பித்தம், வாந்தி, உஷ்ணவாயு, எண்வித குன்மம், வாதநோய், நாவறட்சி தீரும்.

Action

Stomachachic, Anthelmintic

இந்துப்பு

Sodium Chloride Impura

Rock Salt

வேறுபெயர்: சைந்தவம், சிந்தூரம், சந்திரனுப்பு, மதிகூர்மை, மதியுப்பு, மிந்தாச்சொல் என்னும் பெயர்களாலும் வழங்கபெறும்.

சுத்தி

காடியில் மூன்றுநாள் ஊறப்பொட்டு சூரியன் ஒளியில் உலர்த்தி எடுக்க சுத்தியாகும்.

பொதுக்குணம்

அட்டகுன்ம மந்தம் அசிர்க்கரஞ்சூர் சீதபித்தந்

துட்டவையம் நாடிப்புண் தோடங்கள் - கெட்டமலக்

கட்டுவிட விந்தையக் காமியநோய் வன்கரப்பான்

விட்டுவிட விந்துப்பை விள்

விளக்கம்

- எண்விதக்குன்மம்
- அலசம்
- கபபித்தம்
- கபாதிக்கம்
- நரம்புக்கிரந்தி

- திரிதோஷம்
- மலபந்தம்
- தலை, விழி, நா, தந்தமூலம், தாது, கன்னம், கண்டம், யோனி இவ்விடத்து நோய்கள் தீரும்.

Action

Carminative

Laxative

Stomachic

கறிஉப்பு

SODIUM CHLORIDUM (OR) SODIUM CHLORIDE

வேறுபெயர்: கறியுப்பு, சோற்றுப்பு, கடலுப்பு, வீட்டுப்பு, இலவணம், சமுத்திர லவணம்.

பொதுகுணம்

““மந்தம் பொருமலறும் வாயுவும்போம் தீபனமாம்

தொந்தித்த ஐயந் தொடருமோ □ சந்ததமும்

அக்கினியின் புஷ்டி அடருங் கறியுப்பால்

சிக்குகின்ற நீரிறங்குஞ் செப்பு”

மந்தம், வயிற்றுப்பொருமல் தீரும், நீரடைப்பு தீரும்.

Chemical composition

Chloride - 55.1%

Sodium - 30.6%

Sulphate - 7.7%

Magnesium - 3.7%

Calcium - 1.2%

Potassium - 1.1%

Bicarbonate - 0.4%

Bromide - 0.2%

Borate - 0.1%

வளையலுப்பு

மடவார்க்கரத்துப்பு

சுத்தி

புளித்த காடிநீரில் ஒரு காலம் ஊறவைத்து எடுத்து சூரிய வெப்பத்தில் உலர்த்தி எடுக்க இது சுத்தியாகும்.

பொதுக்குணம்

"துளையார் குடல்வாதத் தொந்தவா தத்தோ

டிளையாச் சுவாசமறு மின்னும் - வளையலுப்பாற்

குன்மவலி சூலைவெப்பங் கூறாப்பி லீகமிவை

சென்மம் விட்டோடுமெனத் தேர்"

விளக்கம்

குடல்வாதம், வாதபித்தம், இரைப்பு, வயிற்றுவலி, கீல்பிடிப்பு, சுரம் தீரும்

Action

Laxative, Stomachic, Anthelmintic

வெடியுப்பு

POTASSH NITRAS (OR) POTASSIUM NITRATE SAL PETRE

வேறுபெயர்

பொட்டிலுப்பு, இணங்கன், படைராசன், பூமிகூர்மை, நவாச்சாரமித்ரு என்று வேறுபெயர்கள் உண்டு.

சுத்தி:

உப்பு ஒரு பங்கிற்கு, 4 பங்கு தண்ணீர்விட்டு அடுப்பேற்றி சிறுதீயால் எரித்து கொதிக்கிளம்பும்போது 1 பங்கு உப்புக்கு நான்கு கோழிமுட்டை வெண்கரு சேர்க்க வேண்டும். மேலே அழுக்குத்திரளும். அதனை அகப்பையால் வழித்து நீக்கி, உறையும் பதத்தில் மறுசட்டியின் சீலைகட்டி அதில் வடித்துக் காற்றில்லா இடத்தில் வைத்து மறுநாள் நீரை வடித்துவிட்டு, சூரியஒளியில் உப்பை உலர்த்தவும். இவ்வாறு ஏழு முறை செய்ய சுத்தியாம்.

பொதுகுணம்

"மல்லாரு மட்டகுன்ம மாதருதரக் கட்டி

கல்லா மதைப்புநீர்க் கட்டருக லெல்லாமே

கம்பி கம்பியென்றுங் கருவுண்டா மங்கிநின்ற

கம்பிகம்பி யென்றுரைக்குங் கால்"

விளக்கம்

எண்விதகுன்மம், கருப்பாசயக்கட்டி, மூத்திரக் கிரிச்சரம், நீர்ச்சுருக்கு, சூதிகாவாதம், வாத சுரோணிதம், பெருவயிறு, சாமானிய வாத, பித்த, கப குன்மங்கள், பெருவயிறு,ஈளை கபதோடம் ஒழியும்.

Action

Diuteric, Refrigerant

1. குப்பைமேனி - Acalypha indica

வேறுபெயர்: அரிமஞ்சரி, பூனைவணங்கி, மேனி

Eng: Indian acalypha, cat's struggle

பயன்படும் உறுப்பு: இலை, வேர், சமூலம்

சுவை - கைப்பு, கார்ப்பு

தன்மை - வெப்பம்

பிரிவு - கார்ப்பு

Action

துயரடக்கி - Anodyne

புழுக்கொல்லி - Anthelmintic

பெருமலம்போக்கி - Cathartic

சிறுநீர்ப்பெருக்கி - Diuretic

வாந்தியுண்டாக்கி - Emetic

கோழையகற்றி - Expectorant

சூதகமுண்டாக்கி - Emmenagogue

"தந்தமூ லப்பிணிதீத் தந்திடுபுண் சர்வவிடம்
உந்துகுன்மம் வாதம் உதிரமூ - லந்தினவு
சூலஞ்சு வாசம் தொடர்பீ சங்கபம்போம்
ஞாலங்கொள் மேனியத னால்."

2. கற்றாழை - Aloe Barbadensis

வேறுபெயர் : கன்னி, குமரி

பயன்படும்உறுப்பு : மடற்சோறு, சாறு, வேர்

சுவை - சிறுகைப்பு,

தன்மை - தட்பம்

பிரிவு - இனிப்பு

Action

உரமாக்கி - Tonic

உடற்றேற்றி - Alterative

நீர்மலம்போக்கி - Purgative

ருதுவுண்டாக்கி - Emmenagogue

"பொல்லாமே கங்கபம்பு முச்சூலை குட்டரசம்

அல்லார்மத் தம்பகந்த ரங்குன்மம் எல்லாம்விட்

டேகு மரிக்கு மெரிச்சற் கிரிச்சரமு

மாகு மரிக்கு மருண்டு."

3. முருங்கை - Moringa Oleifera

வேறுபெயர் : சிக்குரு கிரஞ்சம், கிழவீ சோபாஞ்சனம்

Eng : Horse radish

Parts used : All parts of whole plant

சுவை : கைப்பு, துவர்ப்பு, இனிப்பு

தன்மை : தட்பம்

பிரிவு : இனிப்பு, கார்ப்பு

Action

இசிவகற்றி - Antispasmodic

வெப்பமுண்டாக்கி - Stimulant

கோழையகற்றி - Expectorant

சிறுநீர்ப்பெருக்கி - Diuretic

“செறிமந்தம் வெப்பந் தெறிக்குந் தலைநோய்

வெறிமூர்ச்சை கண்ணோய் விலகும் - மறமே

நெருங்கையிலை யொத்தவிழி நேரிழையே! நல்ல

முருங்கை யிலையை மொழி.”

4. நொச்சி - Vitex Negundo

வேறுபெயர் : நித்தில், நீர்க்குண்டி, நெர்க்குண்டி, சிந்தும சிந்துவாரம்

3 types : கருநொச்சி, நீர்நொச்சி, வெண்ணொச்சி

Parts used : இலை, பூ, வேர், பட்டை

சுவை : கைப்பு, துவர்ப்பு, கார்ப்பு

தன்மை : வெப்பம்

பிரிவு : கார்ப்பு

Action

உடற்றேற்றி - Alterative

புழுவகற்றி - Vermiguge

6. தழுதாழை -Clerodendrum phlomoidis

வேறுபெயர்கள் : தக்காரி, வாதமடக்கி, நந்தக்காரி

Parts used : இலை, வேர்

சுவை : கைப்பு, துவர்ப்பு

தன்மை : வெப்பம்

பிரிவு : கார்ப்பு

Action

உடற்றேற்றி - Alterative

துவர்ப்பி - Astringent

EXTERNAL MEDICINE

LAHU VATHA KESARI THYLAM:

1. GINGELLY OIL -10 Palam - 0.375 litre
2. NALLVELAI CHARU (CLEMOE VISCOSA) – 10 Palam -0.375 litre
3. VELLAI POONDU (ALLIUM SATIVUM) – 2.5 Palam - 87.5 gram
4. PERUNGAYAM (FERULA ASAEFOTIDA) – ½ Palam - 17.5 gram
5. MOOSAMBARAM (ALOE LITTORALIS) – ½ Palam - 17.5 gram

Method of preparation:

Vellai poondu mix with mooligai chaaru and add gingelly oil and give light heat

Dosage:

Required amount applied externally over the affected part.

External theraphy:

Varmam, Thokkanam & Ottradam

External Medicine - LAHU VADHA KESARI THYLAM

1. பெருங்காயம் - ferula asafoetida

வேறுபெயர்கள் : அத்தியாகிரகம், இங்கு, இரணம், கந்தி, காயம், பூதநாசம், இராமடம்

English Name : Asafoetida

பயன்படும் உறுப்பு : பிசின்

சுவை : கைப்பு

தன்மை : வெப்பம்

பிரிவு : கார்ப்பு

Action

வெப்பமுண்டாக்கி - Stimulant

அகட்டுவாய்வகற்றி - Carminative

இசிவகற்றி - Antispasmodic

கோழையகற்றி - Expectorant

மலமிளக்கி - Laxative

புழுக்கொல்லி - Anthelmintic

சிறுநீர்ப்பெருக்கி - Diuretic

காமம்பெருக்கி - Aphrodisiac

ருதுவுண்டாக்கி - Emmenagogue.

2.கரியபோளம் - Aloe littoralis

வேறுபெயர் : மூசாம்பரம், சன்னிசாயகம், இரத்தபோளம்

English name : Small Aloe later of Indian Aives

சுவை : கைப்பு

தன்மை : வெப்பம்

பிரிவு : கார்ப்பு

Action

உரமாக்கி - Tonic

வெப்பமுண்டாக்கி - Stimulant

பசித்தீத்தூண்டி - Stomachic

பெருங்கழிச்சலுண்டாக்கி - Cathartic

ருதுவுண்டாக்கி - Emmenagogue.

‘‘மார்புவலி வீக்கம் வயிற்றுவலி பக்கநோய்

வார்மேகக் கட்டியோடு மாவாதம் - பாருலகில்

நீளங்கை காலில் நிலைசூலை யுங்கறுத்த

போலிந் தனைக் காணிற் போம்.''

3. நல்வேளை - Cleome viscosa

English Name : Dog mustard

Parts used : இலை, பூ, விதை, வேர்

சுவை : கார்ப்பு,

தன்மை : வெப்பம்,

பிரிவு : கார்ப்பு

Action

புழுக்கொல்லி - Anthelmintic

இசிவகற்றி - Antispasmodic

அகட்டுவாய்வகற்றி - Carminative

வியர்வைபெருக்கி - Diaphoretic

தடிப்புண்டாக்கி - Rubefacient

''சிரநோய் வலிகுடைச்சல் தீராச் சயித்தியம்

உரநோ யிவைக ளொழியும் - உரமேவும்

வில்வேளைக் காயும் விழியாய் பசிகொடுக்கும்

நல்வேளை தன்னை நவில்.''

4. வெள்ளுள்ளி Allium sativum

English : Carlic

Part used : கிழங்கு

சுவை - கார்ப்பு

தன்மை - வெப்பம்

பிரிவு - கார்ப்பு

Action

அகட்டுவாய்வகற்றி - Carminative, Stomachic, Tonic, Alterative, Stimulant, Expectorant, Diuretic Anthelmintic.

"சன்னியொடு வாதந் தலைநோவு தாள்வலி
மன்னிவரு நீர்க்கோவை வன்சீதம் - அன்னமே
உள்ளுள்ளி கண்பாய் உளைமூல ரோகமும்போம்
வெள்ளுள்ளி தன்னால் வெருண்டு."

எள்

Sesamum indicum

வேறுபெயர் : திலம்

பயன்படும்உறுப்பு : இலை, பூ, காய், விதை

சுவை - இனிப்பு

தன்மை - வெப்பம்

பிரிவு - இனிப்பு

Action

ருதுவுண்டாக்கி - Emmenagogue

வெப்பமுண்டாக்கி - Stimulant

உரமாக்கி - Tonic

சிறுநீர்ப்பெருக்கி - Diuretic

பாற்பெருக்கி - Galactogugue

மலமிளக்கி - Laxative

எள்ளுமருந் தைக்கெடுக்கும் எறனலாந் திண்மைதரும்
உள்ளிலையைச் சேர்க்கும் உதிரத்தைத் - தள்ளுமிரு
கண்ணுக் கொளிகொடுக்குங் காசமுண்டாம் பித்தமுமாம்
பண்ணுக் கிடர்புரியும் பார்.

ANNEXURES -II

QUALITATIVE AND QUANTITATIVE ANALYSIS

BIO-CHEMICAL ANALYSIS OF PANJA LAVANA PARPAM

(IN POWDER FORM)

Preparation of the extract:

5gms of the drug was weighed accurately and placed in a 250ml clean beaker. Then 50ml of distilled water is added and dissolved well. Then it is boiled well for about 10 minutes. It is cooled and filtered in a 100ml volumetric flask and then it is made to 100ml with distilled water. This fluid is taken for analysis.

QUALITATIVE ANALYSIS

S.NO	EXPERIMENT	OBSERVATION	INFERENCE
1.	**TEST FOR CALCIUM** 2ml of the above prepared extract is taken in a clean test tube. To this add 2ml of 4% Ammonium oxalate solution.	A white precipitate is formed.	**Indicates the presence of calcium.**
2.	**TEST FOR SULPHATE** 2ml of the extract is added to 5% Barium chloride solution.	A white precipitate is formed.	**Indicates the presence of sulphate.**
3.	**TEST FOR CHLORIDE** The extract is treated with silver nitrate solution.	A white precipitate is formed.	**Indicates the presence of chloride.**
4.	**TEST FOR CARBONATE** The substance is treated with concentrated HCL.	No Brisk effervescence is formed	Absence of carbonate

5.	**TEST FOR STARCH** The extract is added with weak iodine solution.	No Blue colour is formed.	Absence of starch.
6.	**TEST FOR FERRIC IRON** The extract is acidified with Glacial acetic acid and potassium ferro cyanide.	Blue colour is formed.	Indicate thepresence of ferric iron.
7.	**TEST OF FERROUS IRON** The extract is treated with concentrated Nitric acid and Ammonium thio cyanide solution.	Blood red colour is formed.	**Indicates the presence of ferrous iron.**
8.	**TEST FOR PHOSPHATE** The extract is treated with Ammonium Molybdate and concentrated nitric acid.	No yellow precipitate is formed.	Absence of phosphate.
9.	**TEST FOR ALBUMIN** The extract is treated with Esbach's reagent.	No Yellow precipitate is formed.	Absence of Albumin.
10.	**TEST FOR TANNIC ACID** The extract is treated with ferric chloride.	No Blue black precipitate is formed.	Absence of tannic acid.
11.	**TEST FOR UNSATURATION** Potassium permanganate solution is added to the extract.	It gets decolourised.	**Indicates the presence of unsaturated compound.**

12.	**TEST FOR THE REDUCING SUGAR** 5ml of Benedict's qualitative solution is taken in a test tube and allowed to boil for 2 mts and add 8-10 drops of the extract and again boil it for 2 minutes.	NO colour change occurs.	**Absence of Reducing sugar.**
13.	**TEST FOR AMINO ACID** One or two drops of the extract is placed on a filter paper and dried well. After drying, 1% Ninhydrin is sprayed over the same and dried it well.	Violet colour is formed.	**Indicates the presence of Amino acid.**
14.	**TEST FOR ZINC** The extract is treated with Potassium Ferrocyanide.	No white precipitate is formed	Absence of Zinc.

Inference:

The given sample of "PANJA LAVANA PARPAM" contains Calcium, Sulphate, Chloride,Ferric iron , Ferrous iron, Unsaturated compound, , Amino acid.

ANNEXURE -III

EFFECT OF PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY ON ACETIC ACID INDUCED WRITHING IN MICE[1]

1. Kaneria MS, Naik SR, Kohli RK. Anti-inflammatory,antiarthritic and analgesic activity of a herbal formulation. Indian J.Experimental Biol. 2007; 45: 279.

Acetic acid induced writhing method was adopted for evaluation ofanalgesic activity. Writhing is defined as a stretch, tension to oneside, extension of hind legs, contraction of the abdomen so that theabdomen of mice touches the floor, turning of trunk (twist). Anywrithing is considered as a positive response.

MATERIAL AND METHODS

ANIMALS:

Healthy Swiss albino rats of either sex weighing 20-25g were usedin this study. All the animals were obtained from Animal house ofthe KMCH College of Pharmacy, Coimbatore. The animals were housed comfortably in agroup of six in a single clean plastic cage with a metal frame lid on itstop. They were housed under standard environmental conditions oftemperature (24±1°C) and relative humidity of 30-70 %. A 12:12 hlight dark cycle was followed. All animals had free access to waterand standard pelletized laboratory animal diet ad libitum. All theexperimental procedures and protocols used in this study werereviewed and approved via the Approval No. ---------- bythe Institutional Animal EthicalCommittee (IAEC) of KMCH College of Pharmacy, Coimbatore (685/PO/Re/S/2002/CPSCEA Dated 21st August 2002 constituted in accordance with theguidelines of the CPCSEA, Government of India.

DRUGS:

Acetic acid (Sigma Chemical Co. Bangalore, India) andIndomethacinwere purchased from (Ranbaxy, India). All drugs were dissolved in saline. The different doses of **PANJA LAVANA PARPAM**were preparedwith **ASAFOETIDA AND HONEY**.The control group received vehicle as control. All drugs were prepared just before use.

PREPARATION OF ACETIC ACID:

A solution of acetic acid (1% v/v) in distilled water was prepared.

DOSAGE SCHEDULE:

The required dose for mice/rat will be calculated by using the standard dose calculation procedure from recommended clinical dose.

CONVERSION FORMULA:

Human dose is 5000 mg /kg day

Total clinical dose (a) x conversion factor (b) 0.018 = (c) per 30 gm of mice

5000 mg x 2(a) x 0.018 (b) = 90 (c) /30 gm of mice

90/1000x30 = 2.7 mg

Experimental Doses Calculated as per the standard procedures are

S.No	Groups	Dose /kg, weight	Volume of administration
1	Vehicle Control	--	0.5 ml
2	Therapeutic Dose	2.7 mg /kg	0.5 ml
3	Middle Dose	13.5mg/kg	0.5 ml
4	High Dose	67.5mg/kg	0.5 ml

EXPERIMENTAL PROCEUDRE:

GROUP 1 – CONTROL (IP injection of 0.1 ml 1% acetic acid)

GROUP 2 -- IP injection of 0.1 ml 1% acetic acid +Indomethacin (5mg/kg, i.p)

GROUP 3 -- 0.1 ml 1% acetic acid (ip) + PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY 2.7 mg /kg(**PO)**

GROUP 4 -- 0.1 ml 1% acetic acid (ip) + PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY **13.5mg/Kg(Po)**

GROUP 5 -- 0.1 ml 1% acetic acid (ip) + PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY **67.5mg/kg(po)**

PROCEDURE:

Wister albino mice of either sex were divided into five differentgroups each containing Sixanimals, the animals were markedindividually. Food was withdrawn 12 hours prior to drug administrationtill completion of experiment. The animals wereweighed and numbered appropriately. The test and standard drugswere given orally. After 60 minuteswrithing was induced byintra-peritoneal injection of 1% acetic acid in volume of 0.1 ml/10gbody weight. The writhing episodes were recorded for 30 minutes;stretching movements consisting of arching of the back, elongationof body and extension of hind limbs were counted.

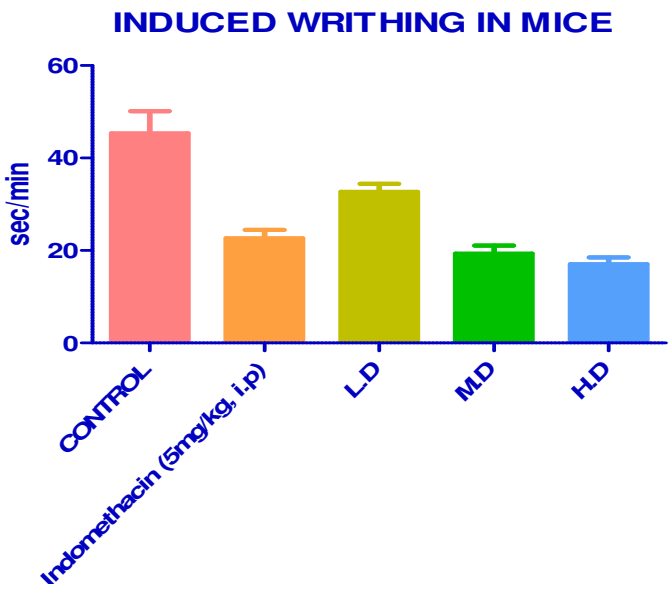
Anti-nociceptive activity was expressed as the percentage inhibition of abdominalconstrictions using the ratio:

(Controlmean – Treatedmean) × 100/Controlmean

EFFECT OF PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYON ACETIC ACID INDUCED WRITHING IN MICE[1]

GROUP	No of Writhing (30min)	Inhibition (%)
CONTROL	45.33±4.807	---
Indomethacin (5mg/kg, i.p)	22.67±1.764***	49.98 %
PLP 2.7 mg /kg (PO)	32.67±1.764*	27.92 %
PLP 13.5mg/kg(po)	19.33±1.764***	57.35 %
PLP 67.5 mg/kg(po)	17±1.528***	62.49 %

Values are expressed as the mean ± S.D; Statistical significance (p)calculated by one way ANOVA followed by dunnett's ns- no significant $^{*}P< 0.001$, $^{**}P < 0.01$, $^{***}P < 0.05$ calculate by comparing treated group with CONTROL group.



EFFECT OF PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYON HOT PLATE METHOD IN MICE[1]

1. Turner RA. Screening methods in pharmacology. In: Turner, R., Hebborn, P. (eds.). Academic press, New York. 1965; 100.

The paws of mice and rats are very sensitive to heat at temperatures which are not damaging the skin. The responses are jumping, withdrawal of the paws and licking of the paws.

MATERIAL AND METHODS

ANIMALS:

Healthy Swiss albino rats of either sex weighing 20-25g were usedin this study. All the animals were obtained from Animal house ofthe KMCH College of Pharmacy, Coimbatore. The animals were housed comfortably in agroup of six in a single clean plastic cage with a metal frame lid on itstop. They were housed under standard environmental conditions oftemperature (24±1°C) and relative humidity of 30-70 %. A 12:12 hlight dark cycle was followed. All animals had free access to waterand standard pelletized laboratory animal diet ad libitum. All theexperimental procedures and protocols used in this study werereviewed and approved via the Approval No. ---------- bythe Institutional Animal EthicalCommittee (IAEC) of KMCH College

of Pharmacy, Coimbatore (685/PO/Re/S/2002/CPSCEA Dated 21st August 2002 constituted in accordance with theguidelines of the CPCSEA, Government of India.

The hot plate, which is commercially available, consists ofa electrically heated surface. The temperature is controlled for 55° to56 °C. This can be a copper plate or a heated glass surface. The animals are placed on the hot plate and the time until either lickingor jumping occurs is recorded by a stop-watch.

EXPERIMENTAL PROCEUDRE:

GROUP 1 – CONTROL

GROUP 2 –Pentazocine (10mg/kg, I.P)

GROUP 3 -- PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY 2.7 mg /kg**(PO)**

GROUP 4 –PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY **13.5mg/kg(po)**

GROUP 5 -- PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY **67.5mg/kg(po)**

PROCEUDRE:

Mice were screened by placing them on a hot plate maintained at 55±1ºC and recording the reaction time in seconds for forepaw licking or jumping. Only mice which reacted within 15sec and which did not show large variation when tested on four separate occasions, each 15min apart, were taken for the test. The time for forepaw licking or jumping on the heated plate of the analgesiometer maintains at 55ºC was taken as the reaction time. Prior to treatment, the reaction time of each mouse (licking of the forepaws or jumping response) was done at 0- and 10-min interval. The average of the two readings was obtained as the initial reaction time (*Tb*). The reaction time (*Ta*) following the administration of the ----------, Pentazocine and distilled water was measured at 0.5, 1, 2, and 3h after latency period of 30min.

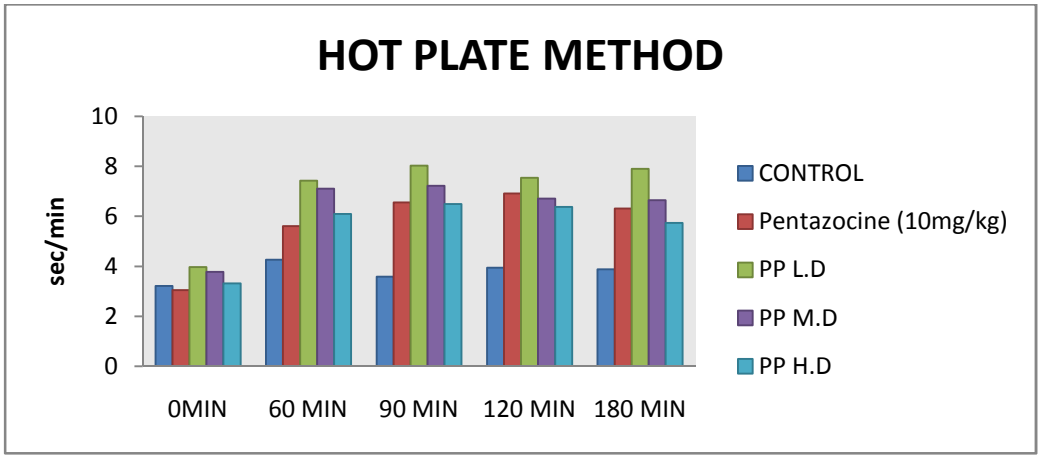
The following calculation was:

Percentage analgesic activity = $Ta\text{-}Tb/Tb \times 100$

EFFECT OF PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYON HOT PLATE METHOD IN MICE

GROUP	Reaction time in seconds at time (minutes) (mean ± sem) (mean ± sem)				
	O mints	60 mints	90 mints	120 mints	180 mints
CONTROL	3.215±0.235	4.265±0.055	3.59±0.39	3.95±0.17	3.885±0.005
STANDARD	3.05±0.17	5.615±0.725	6.555±0.08***	6.91±0.4**	6.31±0.43**
PLP 2.7 mg /kg (po)	3.975±0.415	7.43±0.45**	8.03±0.31***	7.54±0.1***	7.905±0.02***
PLP 13.5mg/kg(po)	3.78±0.2	7.105±0.215*	7.22±0.1***	6.71±0.2**	6.64±0.16***
PLP 67.5 mg/kg(po)	3.315±0.095	6.105±0.235	6.49±0.07***	6.38±0.06**	5.73±0.07**

Values are expressed as the mean ± S.D; Statistical significance (p)calculated by one way ANOVA followed by dunnett's $^{***}P< 0.001$, $^{**}P < 0.01$, $^{*}P < 0.05$ calculated by comparing treated group with CONTROL group.



EFFECT OF PANJA LAVANA PARPAM WITH HONEY/GHEE ON CARRAGEENAN-INDUCED LOCALISED INFLAMMATORY PAIN IN RATS

SUMMARY

The study plan was developed based on the guidelines of Vogel[1] and also it has reference to Chao Ma and Jun-Ming Zhang[2] and Walker et al. [3,]Winter CA, Risley EA, Nuss GW. Carrageenin induced edema in hind paw of the rat as an assay for anti-inflammatory drugs. Proc Soc Exp Biol Med. 1962;111:544–7.

Objective

To study the anti-inflammatory effect of **PANJA LAVANA PARPAM**were prepared **WITH HONEY/GHEE** in the rat model of Carrageenan-induced localized inflammation.

Methods:

Test System

Species	:	Rat
Strain	:	Albino Wister
Age	:	6-8 weeks at the time of dosing
Total no. of Rats	:	24
Sex	:	Male
Weight	:	150 gm

The animals were housed in polypropylene cages with stainless steel top grills having facilities for holding pellet food and drinking water in bottle with stainless steel sipper tube. Each cage contained 6 rats. All rats had free access to potable water and standard pelleted laboratory animal diet *ad libitum*. Paddy husk was used as bedding material. The animals were divided into 5 groups (6 rats/group). Localized inflammatory pain was induced in all groups of animals by intraplantar injection of carrageenan (50 µl of 3% suspension).

One day before the experiment, three basal readings of hind paw in each rat were recorded. Group 1 received vehicle orally, Group 2 received a standard drugDiclofenac sodium (10 mg/kg i.p), whereas groups 3,4and 5 received **PANJA LAVANA PARPAM**. The doses of **PANJA LAVANA PARPAM**were prepared **WITH HONEY/GHEE**, whereas Diclofenac sodiumwas dissolved in

normal saline.After 30 min, the rats were challenged with subcutaneous injection of 0.1 ml of 1% w/v solution of carrageenan into the sub plantar region of left paw. The paw was marked with ink at the level of lateral malleolus and immersed in mercury up to the mark. The paw volume was measured at 0, 1, 2, 3, 4, 5 and 6^{th} hr after carrageenin injection using Digital Plethysmometer. The difference between initial and subsequent reading gave the actual edema volume.

DOSAGE SCHEDULE:

The required dose for mice/rat will be calculated by using the standard dose calculation procedure from recommended clinical dose.

CONVERSION FORMULA:

Human dose is 6000 mg /kg day

Total clinical dose (a) x conversion factor (b) 0.018 = (c) per 150 gm of Rat

6000 mg x 2(a) x 0.018 (b) = 108 (c) /150 gm of Rat

108/1000x150 = 16.2 mg

Experimental Doses Calculated as per the standard procedures are

S.No	Groups	Dose /kg, weight	Volume of administration
1	Vehicle Control	--	1 ml
2	Therapeutic Dose	16.2 mg /kg	1 ml
3	Middle Dose	81mg/kg	1 ml
4	High Dose	405mg/kg	1 ml

EXPERIMENTAL DESIGN:

Group-I: Served as a negative control (0.1ml of 1% carrageenin)

Group-II: Served as standard received Diclofenac sodium (10mg/kg, i.p) +

(0.1ml of 1% carrageenin)

Group-III: Received **PANJA LAVANA PARPAM**were prepared **WITH HONEY/GHEE**

(16.2mg /kg) + (0.1ml of 1% carrageenin)

Group IV: Received **PANJA LAVANA PARPAM**were prepared **WITH HONEY/GHEE**

(81 mg/kg) + (0.1ml of 1% carrageenin)

Group V: Received **PANJA LAVANA PARPAM**were prepared **WITH HONEY/GHEE**

(405 mg/kg) + (0.1ml of 1% carrageenin)

TABLE: EFFECT OF PANJA LAVANA PARPAMWITH HONEY/GHEE ON Carrageenin -INDUCED PAW EDEMA IN RATS (BODY WEIGHT in gms)

Group	Only Carrageenin	Carrageenin + STD	Carrageenin + L.D	Carrageenin + M.D	Carrageenin + H.D
INITIAL BODY WEIGHT	**156.7±1.333**	**142.3±28.48**	**161±4.973**	**166.3±2.813**	**151.5±3.191**

Values are expressed as the mean ± S.D. Statistical significance (p) calculated by one way ANOVA followed by dunnett's. ns- not significant $^{**}P< 0.05$ calculated by comparing treated group with control group.

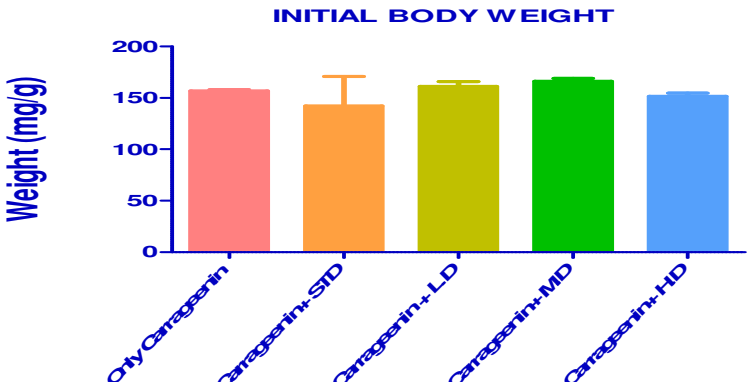


TABLE: EFFECT OF PANJA LAVANA PARPAMWITH HONEY/GHEE ON Carrageenin -INDUCED PAW EDEMA IN RATS

Group	Mean paw volume before Carrageenin injection	Paw Volume after induction with Carrageenin Increase in paw volume (ml) after Carrageenin injection (mean ± SEM)/Percent inhibition of edema						
	0 min	30 min	1h	2h	3h	4h	5h	6h
Control	4.105± 0.1627	7.425± 0.1594	7.483± 0.1429	8.348± 0.2079	8.39± 0.1014	7.86± 0.0801	8.283± 0.2986	7.913± 0.2277
Standard	4.085± 0.1617	7.033± 0.1053	7.813± 0.1993	7.79± 0.249	7.958± 0.2091	7.788± 0.1251	6.033± 0.1574	5.663± 0.2765
LD	3.698± 0.258	6.973± 0.1963	7.648± 0.1579	8.153± 0.2022	8.105± 0.1269	7.448± 0.2509	6.638± 0.3813	6.1± 0.2967

MD	4.283± 0.09437	7.068± 0.1006	7.488± 0.2231	7.8± 0.1545	8.16± 0.1066	7.75± 0.03764	6.235± 0.1546	5.49± 0.1828
HD	4.028± 0.2623	7.108± 0.3236	7.66± 0.3129	6.893± 0.3936**	7.335± 0.2522**	6.94± 0.1685	6.17± 0.1339	5.003± 0.2594

Values are expressed as the mean ± S.D. Statistical significance (p) calculated by one way ANOVA followed by dunnett's. ns- not significant $^{**}P< 0.05$ calculated by comparing treated group with control group.

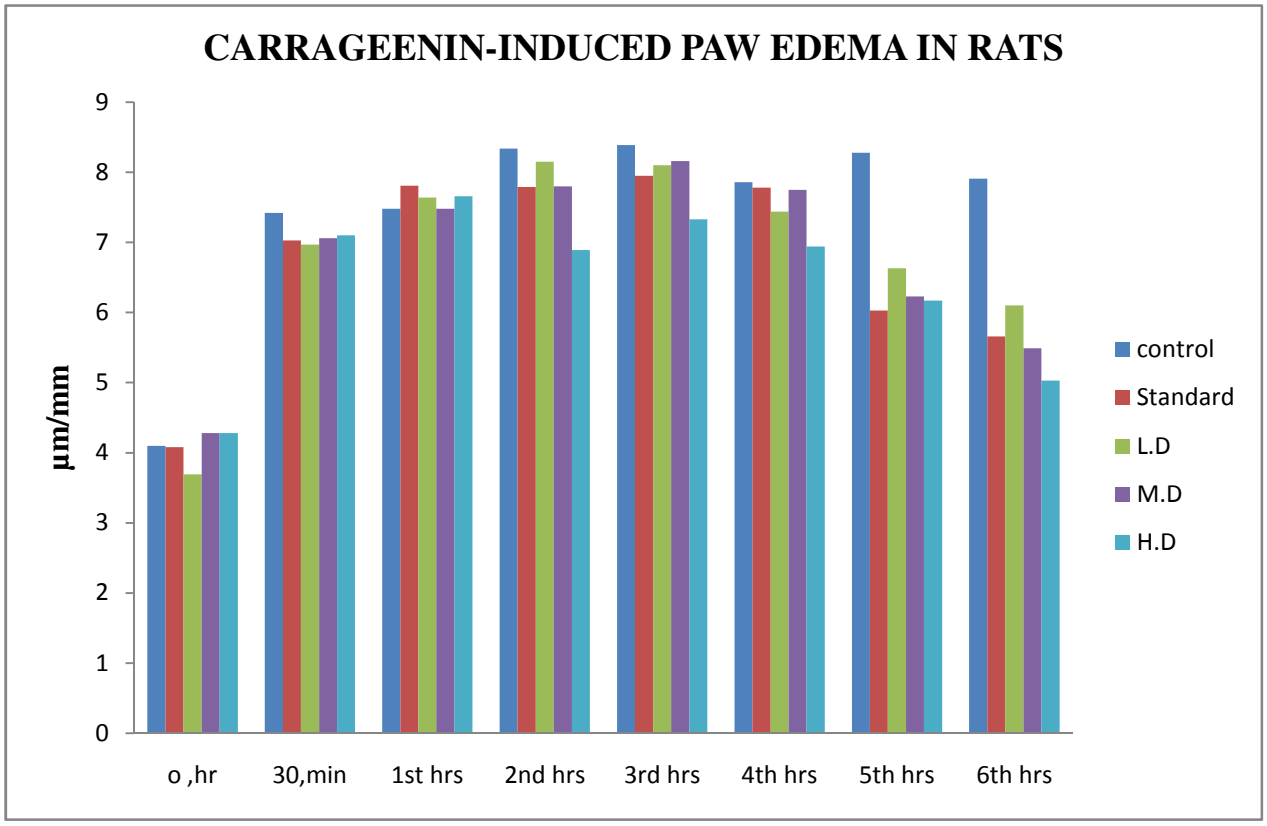
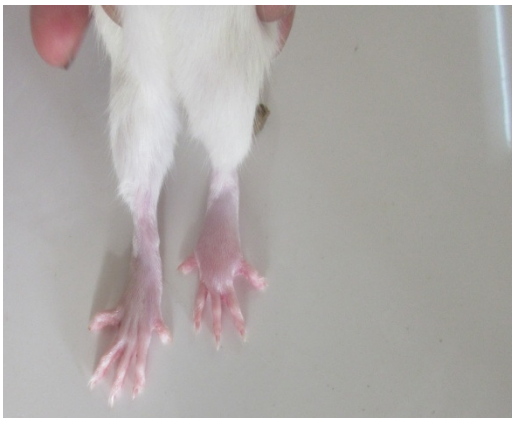


FIG: EFFECT OF PANJA LAVANA PARPAMWITH HONEY/GHEE ON CARRAGEENIN-INDUCED PAW EDEMA IN RATS



GROUP – I ONLY CARRAGEENIN

GROUP –II CARRAGEENIN + STD

GROUP –III CARRAGEENIN + L.D

GROUP –IVCARRAGEENIN+MD

GROUP –VCARRAGEENIN+ H D

ACUTE TOXICITY STUDY IN FEMALE WISTER RATS TO EVALUATE TOXICITY PROFILE OF PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY

Table 1. Test substance details

Name of the test substance	**PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**
Colour of the test substance	-Light brown
Nature of the test substance	Powder

Table 2. Experimental protocol

Name of the study	Acute toxicity
Guideline followed	OECD 423 method-acute toxic class method
Animals	Healthy young adult female wister rats, nulliparous, non-pregnant
Body weight	150-200 g
Sex	female
Administration of dose and volume	6000 mg/kg in 200g body weight, single dose in 1 ml
Number of groups and animals	5 groups and 3 animals in each group 1000,2000,3000,4000 and 5000mg/kg
Route of administration	Oral Cavage (po)
Vechicle	**ASAFOETIDA AND HONEY**

Table3. Housing and feeding conditions

Room temperature	22°C ± 3°C
Humidity	40-60%
Light	12 h : 12h (light : dark cycle)
Feed	Standard laboratory animal food pellets with water *ad libitum*

Table 4. Study period and observation parameters

Initial once observation	First 30 minutes and periodically 24 h
Special attention	First 1-4 h after drug administration
Long term observation	Upto 14 days
Direct observation parameters	Tremors, convulsions, salivation, diarrhea, lethargy, sleep and coma.
Additional observation parameters	Skin and fur, eyes and mucous membrane, respiratory, circulatory, autonomic and central nervous systems, somatomotor activity and behavior pattern etc.

The time of death, if any, is recorded. (Complete observations: annexure I). After administration of the drug, food is withheld for a further 1-2 hours.

Study procedure

Acute oral toxicity was performed as per organization for economic co-operation for development (OECD) guideline 423 method. The **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY** was administered in a single dose by tuberculin syringe. Animals are fasted 3 h prior to dosing (food was withheld for 3 h but not water). Following the period of fasting animals was weighed and test substance was administered orally at a dose of 1000,2000,3000,4000 and 5000mg/kg. After the**PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY** administration, food was withheld 2 h in mice. Animals are observed individually after at least once during the first 30 minutes, periodically during the first 24 hrs, with special attention given during the first 4 hrs, and daily thereafter, for a total of 14 days.

REPORT

Toxicological evaluation ofPANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY

Table:5 Effect of **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY** on acute toxicity test in female rats.

S.N	Response	Head		Body		Tail	
		Before	After	Before	After	Before	After
1	Alertness	Normal	Normal	Normal	Normal	Normal	Normal
2	Grooming	Absent	Absent	Absent	Absent	Absent	Absent
3	Touch response	Absent	Absent	Absent	Absent	Absent	Absent
4	Torch response	Normal	Normal	Normal	Normal	Normal	Normal
5	Pain response	Normal	Normal	Normal	Normal	Normal	Normal
6	Tremors	Absent	Absent	Absent	Absent	Absent	Absent
7	Convulsion	Absent	Absent	Absent	Absent	Absent	Absent
8	Righting reflux	Normal	Normal	Normal	Normal	Normal	Normal
9	Gripping strength	Normal	Normal	Normal	Normal	Normal	Normal
10	Pinna reflux	Present	Present	Present	Present	Present	Present
11	Corneal reflux	Present	Present	Present	Present	Present	Present
12	Writhing	Absent	Absent	Absent	Absent	Absent	Absent
13	Pupils	Normal	Normal	Normal	Normal	Normal	Normal
14	Urination	Normal	Normal	Normal	Normal	Normal	Normal
15	Salivation	Normal	Normal	Normal	Normal	Normal	Normal
16	Skin colour	Normal	Normal	Normal	Normal	Normal	Normal
17	Lacrimation	Normal	Normal	Normal	Normal	Normal	Normal

RESULT:

From acute toxicity study it was observed that the administration of **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**to Female Wister rats did not induce drug-related toxicity and mortality in the animals up to 5000mg/kg in 200g female Wister rats. So No-Observed-Adverse-Effect- Level (NOAEL) of **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY** is 5000 mg/kg equal to human dose

DISCUSSION

PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYwas administered single time at the doses of 1000,2000,3000,4000 and 5000mg/kgto female Wister rats and observed for consecutive 14 days after administration. Doses were selected based on the pilot study and literature review. All animals were observed daily once for any abnormal clinical signs. Weekly body weight and food consumption were recorded. No mortality was observed during the entire period of the study. Data obtained in this study indicated no significance physical and behavioral signs of any toxicity due to administration of **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**at the doses of 1000,2000,3000,4000 and 5000mg/kg to female Wister rats

At the 14th day, all animals were observed for functional and behavioral examination. In functional and behavioral examination, home cage activity, hand held activity were observed. Home cage activities like Body position, Respiration, Clonic involuntary movement, Tonic involuntary movement, Palpebral closure, Approach response, Touch response, Pinna reflex, Sound responses, Tail pinch response were observed. Handheld activities like Reactivity, Handling, Palpebral closure, Lacrimation, Salivation, Piloercetion, Papillary reflex, abdominal tone, Limb tone were observed. Functional and behavioral examination was normal in all treated groups. Food consumption of all treated animals was found normal as compared to normalgroup.

SUMMARY & CONCLUSION:

Summary:

The present study was conducted to know single dose toxicity of **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**on female Wister rats. The study was conducted using 15 female Wister rats. The female animals were selected for study of 8- 12 weeks old with weight range of within ± 20 % of mean body weight at the time of randomization. The groups were numbered as group I, II, III, IV and V and dose with 1000,2000,3000,4000 and 5000mg/kg of **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**. The drug was administered by oral route single time and observed for 14 days. Daily the animals were observed for clinical signs and mortality.

There were no physical and behavioral changes observed in Female Wister rats during 14 days. Mortality was not observed in any treatment groups.

Conclusion:

The study shows that **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**did not produce any toxic effect at dose of 1000,2000,3000,4000 and 5000mg/kg to rats. SoNo-Observed-Adverse-Effect-Level (NOAEL) of **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY** is 5000 mg/kg.

7.0 ABBREVIATIONS

No.	Number
Mg	Milligram
Kg	Kilogram
LD_{50}	Lethal Dose $_{50}$
p.o	peros
ML	Milliliter
%	percentage

R&D Research and Development

g% Gram percentage

g Gram

NOAEL No-Observed-Adverse-Effect-Level

MLD Minimum Lethal Dose

MTD Maximum Tolerated Dose

OECD Organisation of Economic Co-operation and Development

CPCSEA Committee for the Purpose of Control and Supervision of Experiments onAnimals

8.0 REFERENCES:

1. OECD. Guideline for Testing of Chemicals 423, Acute oral toxicity (acute toxic class method). December 2001.

ANNEXURE –IV

SUB-ACUTE TOXICITY STUDY IN WISTER RATS TO EVALUATE TOXICITY PROFILE OF PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY

Objective

The objective of this study is to evaluate the toxic effects, if any, as a result of the repeated once daily oral administration of **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**to Wister Albino rats for a minimum period of 28 consecutive days. This study will provide information on any major toxic effects, target organs and a rationale for concluding the No-Observed-Adverse-Effect-Level (NOAEL) and/or No Observed Effect Level (NOEL) / LOEL (Low Observed Effect Level) and risk assessment in humans.

1. Test Guidelines

This study plan is prepared as per the following guidelines:

Schedule – Y, Amendment version 2005, Drugs and Cosmetics Rules, 1945.

OECD – 407 – Repeated dose 28-day Oral Toxicity Study in Rodents, Adopted 3 October, 2008.

1.1. Test System Details

Species	:	Rat
Strain	:	Wister Albino
Source	:	Sree Venkateshwara Enterprises Pvt Ltd, Bangalore
Age	:	6-8 weeks
Sex	:	Male / Female (nulliparous and non-pregnant)
Body weight	:	160.0to 180.0 g

1.2. Acclimatization

Animals will be allowed to acclimatize to the experimental room conditions for five days prior to the commencement of dosing. During the acclimatization period, the animals will

be observed daily for any apparent adverse clinical signs. Prior to assignment to the study and commencement of treatment, a detailed physical health examination will be performed on all animals by a veterinarian and animals with any evidence of ill health or poor physical condition will not selected for the study.

1.3. Randomization and Grouping

On the starting day of dosing, the animals will be weighed and health examination will be performed by veterinarian. Animals will be randomly allocated to different groups according to their body weight by using MS-Excel sheet as described in the randomization SOP. Animals will be divided into four groups (vehicle control, low, intermediate, and high dose). At the initiation of the treatment, the body weight variation between the groups did not exceed ±20% of the mean weight of each sex.

1.4. Animal Identification

In each cage, animals will be identified with numbers by marking at the base of the ear. The cages will be identified with an attached colored cage label showing study number, study code, group number, sex, dose, strain, species, cage number, route of administration and animal number.

2. Animal Husbandry

2.1. Animal Welfare and approval

The study was approved by the IAEC (SLS) and Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA registration number: Abc14).Their recommendations regarding animal care and handling will be followed.

2.2. Environmental Conditions

The temperature of the experimental room will be maintained at 22±3^{0}Cand the relative humidity between 30-70 %. The photoperiod will be 12 hours light and 12 hours dark cycles

2.3. Housing Conditions

Two animals will be housed in autoclaved polypropylene rat cages (Size in mm=L x W x H: 430 x 290 x 160) using paddy husk as the bedding material. Each cage will be fitted with a top grill having provision for keeping rodent pellet feed and an autoclaved

polypropylene water bottle with stainless steel drinking nozzle. Cages will be placed on 3-tier racks and cage rotation will be performed every week. Cages will be changed at least twice a week. The cages and water bottles will be cleaned and autoclave sterilized.

2.4. Sanitation

Each day, the floor of the animal room will be swept and mopped. Cages and bedding material will be changed once in three days and water bottles will be changed daily. All the experimental procedures will be done in a clean environment.

2.5. Feed

The experimental animals will be provided with irradiated rodent pellet feed *ad libitum* supplied from Sai feeds Pvt ltd, Chennai . Feed will be withheld for four hours prior to blood collection and necropsy.

2.6. Drinking Water

Animals will be provided with filtered drinking water *ad libitum* passed through water filter system (Aquaguard™) in autoclaved polypropylene bottles. Water bottles will be changed daily. Microbial analysis of water will be carried out once monthly and the report is maintained in the study file.

3. Personnel Safety

All personnel handling animals undergo regular medical examination. Protective clothing like apron, face mask, head cap, and gloves will be used to maintain hygienic conditions.

4. Materials and Methods

4.1. Preparation of Dose formulation

The dose formulation will be prepared under aseptic conditions as per SLS, SOP.

4.2. Route of Administration and Justification

Administration will be by oral gavage, as it is one of the possible routes of exposure.

4.3. Frequency and Duration of Administration

Once daily for 28 consecutive days

4.4. Dosing Procedure

The test item will be administered in once daily by oral gavage using a suitable intubation cannula fitted with a graduated syringe. The scheme of dosing and sacrifice time points are presented in the below below Table.

4.5. Experimental Procedures

All experimental procedures will be performed in accordance with the Study plan and Standard Operating Procedures (SOPs) of SLS.

4.6 DOSAGE SCHEDULE:

The required dose for mice/rat will be calculated by using the standard dose calculation procedure from recommended clinical dose.

CONVERSION FORMULA:

Human dose is 5000 mg /kg day

Total clinical dose (a) x conversion factor (b) 0.018 = (c) per 150 gm of Rat

5000 mg x 2(a) x 0.018 (b) = 90 (c) /150 gm of Rat

90/1000x150 = 13.5 mg

Experimental Doses Calculated as per the standard procedures are

S.No	Groups	Dose /kg, weight	Volume of administration
1	Vehicle Control	ASAFOETIDA AND HONEY	1 ml
2	Therapeutic Dose	13.5 mg /kg	1 ml
3	Middle Dose	67.5mg/kg	1 ml
4	High Dose	337.5mg/kg	1 ml

1.1.1 Experimental Design

Group No.	Group	Dose (mg/kg b.wt /day)	No. of Animals	
			Male	Female
G1	Vehicle control	ASAFOETIDA AND HONEY	5	5
G2	Low dose of **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**	13.5 mg /kg	5	5
G3	Intermediate dose**PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**	67.5mg/kg	5	5
G4	High dose **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**	337.5mg/kg	5	5

5. **Observations**

Animals will be observed daily throughout the treatment period at regular intervals. During the treatment period, animals will be observed twice daily for any clinical signs of toxicity, morbidity and mortality. All the surviving animals will be sacrificed at the end of scheduled period and subjected to gross necropsy and histopathological evaluations.

5.1. Clinical Signs

All the animals will be subjected to cage-side (home-cage) observations twice a day for any clinical signs of toxicity, preferably at the same time each day and considering the peak period of anticipated effect. In addition to home cage observations, a detailed clinical examination will be performed once prior to dosing and weekly thereafter during treatment period.

5.2. Morbidity/ Mortality

All animals will be examined twice a day for mortality and signs of morbidity.

5.3. Body Weights

Body weights will be recorded at the beginning of acclimatization, before randomization, there after at weekly intervals and at the time of necropsy.

5.4. Feed Consumption

Feed consumption will be calculated on a weekly basis throughout the study period.

5.5. Hematologyand Clinical Biochemistry

Hematology and clinical biochemistry tests will be performed with terminally collected blood samples on day-29 from all animals. Animals will be deprived of feed overnight and blood samples will be collected by tapping the ear for visibility of the vein site and inserted the needle into the marginal ear vein and collected the blood into micro centrifuge tube. Approximately 0.5 ml of blood will be collected in vials containing 1% EDTA (20µl) as an anticoagulant for hematological analysis.

Approximately 2 ml blood will be collected from each animal in micro centrifuge tubes containing 15µl of heparin (19 units) and the plasma will be separated by centrifugation at 4000 rpm for ten minutes at 4^{o}C. The plasma will be stored at -20 ^{o}C ± 2 and used for all clinical chemistry analysis.

5.6. Hematology

Erythrocyte count (RBC), Total Leucocyte count (WBC), Hemoglobin (Hb), Hematocrit (HCT), Mean Corpuscular Volume (MCV), Mean Corpuscular Hemoglobin (MCH), Mean Corpuscular Hemoglobin Concentration (MCHC) and Platelet (PLTC).

5.7. Clinical Biochemistry

Glucose, Alanine Aminotransferase (ALT), Aspartate Aminotransferase (AST), Alkaline phosphatase (ALP), Total protein, Albumin, Creatinine, Urea, Cholesterol, Triglycerides, Sodium, Potassium, Calcium, and Chloride.

1.1.25.8 Pathology

All animals will be euthanized by CO_2 asphyxiation and subjected to necropsy under the supervision of the veterinary pathologist. Different tissues/organs of thoracic, abdominal and cranial cavities will be examined for any gross pathological changes. Tissues from vehicle control and high dose groups will be subjected to detailed histopathological analysis (Ovaries/ testes, kidneys, liver, lungs). The organs will be fixed using Bouin's (reproductive organs) and 10% neutral buffered formalin (kidneys, liver, spleen, lungs).Processing of tissue will be done by spin tissue processer, embedding of the tissue by tissue embedder. The tissues will be initially trimmed to 10-20µ thickness and later 3-6µ to obtain thinner tissue sections by using rotary microtome. Haematoxylin and Eosin staining will be performed for all tissues.

5.8. Organ Weights

Absolute weights of adrenal glands, brain, ovaries/testes, epididymis/uterus, heart, kidneys, liver, spleen and lungs will be recorded for all the animals after trimming adherent tissue immediately after dissection from the animal. Paired organs will be weighed together. Relative weights of these organs against fasting animal body weights will be calculated and reported.

6. Data Compilation

Data will be summarised in a tabular form showing the number of animals, experimental design, dose groups, dose volume and concentrations, test item and vehicle control details. All findings like clinical signs, mortality and morbidity data, time of death, body weights, feed consumption, clinical signs, and necropsy and pathology observations will be recorded and given in the final report. One original copy of the final report is issued to the sponsor.

7. Statistical Analysis

All the parameters of treated groups of both sex, viz. body weight, feed consumption, organ weights (absolute and relative), biochemical parameters, and hematology parameters will be analyzed using SPSS software, version 16.0 by using one-way ANOVA test with multiple comparison (vehicle controls treated groups) in the study report, and p value < 0.05 is considered as statistically significant.

8. References

1. Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA) guidelines for Laboratory Animal Facility, The Gazette of India, 1998.
2. Hayes AW, 2000. Principles and Methods of Toxicology, 4th ed., Taylor and Francis, London.
3. Karl-Heinz Diehl, R. H. (2001). A Good Practice Guide to the Administration of Substances and Removal of Blood,Including Routes and Volumes. journal of applied toxicology , 15-23.
4. OECD – 407 - Repeated dose 28-day oral Toxicity Study in Rodents, Adopted October 3, 2008.
5. Schedule – Y, Amendment version 2005, Drugs and Cosmetics Rules, 1945.

MATERIALS AND METHODS

ESTIMATION OF HEMATOLOGICAL PARAMETERS: [1]

Collection of blood for hematological studies

After the treatment period the animals were anaesthetized by ketamine hydrochloride and the blood was collected from Retro-orbital sinus by using capillary into a centrifugation tube which contains EDTA for haematological parameters The haematological parameters like RBC, WBC and Hb percentage, Differential cell count, MCV, MCHC, Hematocrit, MCH, platelet count wereestimated by the following procedures.

1. ENUMERATION OF RED BLOOD CELLS: [1]Ramnic 2007)

Reagents : RBC diluting fluid

Procedure:

Using a red blood cell pipette of haemocytometer, well mixed blood was drawn up to 0.5 mark and RBC diluting fluid was taken up to mark II. The fluid blood mixture was shaken and transferred onto the counting chamber. The cells were allowed to settle to the bottom of the chamber for 2 min. See the fluid does not get dried. Using 45X or high power objective the RBC's were counted uniformly in the larger corner squares.

The cells were expressed as number of cells $x10^{12}$/l

2. ENUMERATION OF WBC: [2] John 1972)

Reagents:

Turk's fluid: Turk's fluid was prepared by mixing 2ml of acetic acid with 100 ml of distilled water. To this 10 drop of aqueous methylene blue 3 % w/v) was added. This solution haemolysis the red cells due to acidity so that counting of white cells becomes easy.

Procedure:

Using a white blood cell pipette of haemocytometer, well mixed blood was drawn up to 0.5 mark and WBC diluting fluid was taken up to mark II. The fluid blood mixture was shaken and transferred onto the counting chamber. The cells were allowed to settle to the bottom of the chamber for 2 min. See the fluid does not get dried.

Using 10X or low power objective the WBC's were counted uniformly in the larger corner squares.

The cells were expressed as number of cells/10mm.

3. DIFFERENTIAL LEUCOCYTE COUNT: [3] John 1972)

Reagent:

Leishmann's stain: 150mg of powdered leishmann's stain was dissolved in 133ml of acetone free methanol.

Procedure:

A blood film stained with leishmann's stain was examined under oil immersion and the different types of WBCs were identified. The percentage distribution of these cells was then determined. Smears were made from anticoagulant blood specimens and stained with leishmann's stain. The slides were preserved for counting the number of lymphocytes and neutrophils, per 100 cells were noted.

From the different Leukocyte count and WBC count, absolute lymphocyte and neutrophil count were calculated.

$$\text{Absolute neutrophil count} = \frac{\text{Number of neutrophils}}{100} \times \text{TWBC}$$

$$\text{Absolute lymphocyte count} = \frac{\text{Number of lymphocytes}}{100} \times \text{TWBC}$$

DETERMINATION OF BIOCHEMICAL PARAMETERS:

For assessment of biochemical parameters, blood samples were collected from the animals by puncturing the retro-orbital plexus and centrifuged. The serum collected after centrifugation was analyzed for various biochemical parameters like SGOT, SGPT, ALP,TC.TG,HDL All of the above biochemical parameters were estimated using semi autoanalyzer (Photometer 5010 $_{V5+}$, Germany) with enzymatic kits procured from Piramal Healthcare limited, Lab Diagnostic Division, Mumbai, India.

1. Total Cholesterol (TC)

Principle

Determination of cholesterol is done after enzymatic hydrolysis and oxidation. The colorimetric indicator is quinoneimine, which is generated from 4-aminoantipyrine and phenol by hydrogen peroxide under the catalytic action of peroxidase (trinder's reaction).

Cholesterol ester + H_2O $\xrightarrow{CHE}$ Cholesterol + Fatty acid

Cholesterol + O_2 $\xrightarrow{CHO}$ Cholesterol-3-one + H_2O_2

$2H_2O_2$ + 4- Amino antipyrine + Phenol $\xrightarrow{POD}$ Quinonelimine + 4 H_2O_2

Method

CHOD-PAP: Enzymatic photometric test

Table 6: Reagents

Goods buffer (pH 6.7)	50 mmol/ l
Phenol	5 mmol/l
4-aminoantipyrine	0.3 mmol/l
Cholesterol estrase	> 200 U/l
Cholesterol oxidase	> 100 U/l
Peroxidase	3 KU/l
Standard	(5.2 mmol/l)

Assay procedure

a. 1 ml (1000 µl) of reagent-1 is taken in a 5 ml test tube.
b. Added 0.01 ml (10 µl) of serum.
c. Mixed well and incubated at 37°C for 5 min.
d. Read the test sample.

NORMAL RANGE: <200 mg/dl in serum.

1. Deeg R, Ziegenhorn J, Kinetic enzymatic method for automated determination of total cholesterol in serum, Clin. Chem., 1983, 29:1798-802.

2. Triglycerides

Principle

Determination of triglycerides (TG) alters enzymatic splitting with lipoprotein lipase. Indicator is quinoneimine which is generated from 4-aminoantipyrine and 4- chlorophenol by hydrogen peroxidase under the catalytic action of peroxidase.

Triglycerides $\xrightarrow{LPL}$ Glycerol + fatty acid

Glycerol + ATP $\xrightarrow{GK}$ Glycerol-3-phosphate+ ADP

Glycerol-3-phosphate +O_2 $\xrightarrow{GPO}$ Dihydroxyaceton phosphate + H_2O_2

$2H_2O_2$ + 4- Amino antipyrine + 4- chlorophenol $\xrightarrow{POD}$ Quinonelimine + HCL + $4H_2O_2$

Method

Colorimetric enzymatic test using glycerol-3-phosphate-oxidase (GPO).

Reagents

Components and concentrations in the test Goods buffer pH 7.2, 50 mmol/ l

Table 7: Reagents

4-chloroPhenol	4 mmol/l
ATP	2 mmol/l
Mg^{2+}	15 mmol/l
Glycerokinase	> 0.4 Kμ/l
Peroxidase	> 2 Kμ/l
Lipoprotein lipase	> 4 Kμ/l
4-aminoantipyrine	0.5 mmol/l
Glcerol-3-phosphate- oxidase	> 1.5Kμ/l
Standard	(2.3 mmol/l)

Assay procedure

a. 1 ml (1000 μl) of reagent-1 is taken in a 5 ml test tube.
b. Added 0.01 ml (10 μl) of serum.
c. Mixed well and incubated at 37°C for 15 min.
d. Read the test sample.

Normal Range: <200 mg/dl in serum.

1. Cole T.G, Klotzsch S.G, Mcnarmara J, Measurement of triglyceride concentration, In Rifai N, Warnick G.R, Dominiczak M.H, Handbook of lipoprotein testing, Washington:AACC, Press, 1997, 115-26.

3. HDL Cholestrol

Principle

Chylomicrons, VLDL and LDL are precipitated by adding phosphotungstic acid and magnesium ions to the sample. Centrifugation leaves only the HDL in the supernatant. The cholesterol content in it is determined enzymatically.

Method

Phosphotungstic acid precipitation method.

Table 8: Reagents

Phosphotungstic acid	0.55 mmol/l
Magnesium chloride	25 mmol/l

Assay procedure

A. Preparation of supernatant for the HDL-CHL estimation

Added 200 µl of serum to the 500 µl of HDL-Cholesterol precipitating reagent (from HDL kit) in 1.5 ml centrifuge tube and mixed well. Centrifuged the above solution at 4000 rpm for 10 min.

B. Preparation of test sample for the estimation of HDL-Cholesterol

a. Taken 1000 µl of reagent-1 (from cholesterol kit) in a 5 ml test tube.
b. Added, 100 µl of supernatant from above centrifuged solution
c. Mixed well and incubated at 37°C for 15 min.
d. Read the test sample.

Normal Range: >60 mg/dl in serum.

1. Friedewald W.T, Levy R.T, Frederickson D.S, Estimation of VLDL and LDL cholesterol, Clin. Chem., 1972, 18:499-502.

4. ESTIMATIONOFSERUMGLUTAMATEPYRUVATETRANSAMINASES(SGPT/ALT)

1. Determination of aspartate aminotransferase (AST)

Aspartate aminotransferase, also known as Glutamate Oxaloacetate Transaminase (GOT)catalyses the transamination of L-aspartate and α keto glutarate to form oxaloacetate and L- glutamate. Oxaloacetate formed is coupled with 2,4- Dinitrophenyl hydrazine to form hydrazone, a brown coloured complex in alkaline medium which can be measured colorimetrically.

Reagents

Buffered aspartate (pH 7.4); 2,4- DNPH reagent; 4N sodium hydroxide; working pyruvate standard; solution I (prepared by diluting 1 ml of reagent 3 to 10 ml with purified water).

Procedure

Rietman and Frankle method was adopted for the estimation of SGOT. (Reitmann S, Frankel S, 1957. A colorimetric method for the determination of serum oxaloacetic and glutamic pyruvate transminases. American Journal of Clinical Pathology.28: 56-63.The reaction systems used for this study included blank, standard, test (for each serum sample) and control (for each serum sample). 0.25 ml of buffered aspartate was added into all the test tubes. Then 0.05 ml of serum was added to the test group tubes and 0.05 ml of working pyruvate standard into the standard tubes. After proper mixing, all the tubes were kept for incubation at 37^{o}C for 60 min, after which 0.25 ml each of 2,4- DNPH reagent was added into all the tubes. Then, 0.05 ml of distilled water and 0.05 ml of each serum sample was added to the blank and the serum control tubes respectively. The mixture was allowed to stand at room temperature for 20 min. After incubation, 2.5 ml of solution I was added to all test tubes. Mixed properly and optical density was measured in a spectrophotometer at 505 nm within 15 min.

The enzyme activity was calculated as:-

AST (GOT) activity in IU/L) = [(Absorbance of test **-** Absorbance of control)/ (Absorbance of standard - Absorbance of blank)] x concentration of the standard

2. Determination of alanine aminotransferase(ALT)

Alanine aminotransferase, also known as Glutathione Peroxidase (GPT) catalyses the transamination of L-alanine and α keto glutarate to form pyruvate and L- Glutamate. Pyruvate so formed is coupled with 2,4 – Dinitrophenyl hydrazine to form a corresponding hydrazone, a brown coloured complex in alkaline medium which can be measured colorimetrically.

Reagents

Buffered alanine (pH 7.4), 2,4–DNPH, 4N sodium hydroxide, working pyruvate standard, solution I (prepared by diluting 1 ml of reagent 3 to 10 ml with purified water).

Procedure

Rietman and Frankle method was dopted for the estimation of SGPT. The reaction systems used for this study included blank, standard, test (for each serum sample) and control (for each serum sample). 0.25 ml of buffered alanine was added into all the test tubes. This was followed by the addition of 0.05 ml of serum into the test group tubes and 0.05 ml of working pyruvate standard into the standard tubes. After proper mixing, all the tubes were kept for incubation at 37^{o}C for 60 minutes, after which 0.25 ml each of 2,4- DNPH reagent was added into all the tubes. Then, 0.05 ml of distilled water and 0.05 ml of each serum sample was added to the blank and the serum control tubes respectively. The mixture was allowed to stand at room temperature for 20 min. After incubation, 2.5

ml of solution **I** was added to all test tubes. Mixed properly and optical density was read against purified water in a spectrophotometer at 505 nm within 15 min.

The enzyme activity was calculated as:- ALT (GPT) activity in IU/L) = [(Absorbance of test **-** Absorbance of control)/ (Absorbance of standard - Absorbance of blank)] x concentration of the standard.

3. Determination of alkaline phosphatase (ALP)

Alkaline phoshatase from serum converts phenyl phosphate to inorganic phosphate and phenol at pH 10.0. Phenol so formed reacts in alkaline medium with 4-aminoantipyrine in presence of the oxidising agent potassium ferricyanide and forms an orange-red coloured complex, which can be measured spectrometrically. The color intensity is proportional to the enzyme activity.

Reagents:

Buffered substrate

Chromogen Reagent

Phenol Standard, 10 mg%

Procedure:

ALP was determined using the method of Kind (Kind PRM, King EJ, 1972. *In-vitro* determination of serum alkaline phosphatase. Journal of Clinical Pathology 7: 321-22\). The working solution was prepared by reconstituting one vial of buffered substrate with 2.2 ml of water. 0.5 ml of working buffered substrate and 1.5 ml of purified water was dispensed to blank, standard, control and test. Mixed well and incubated at 37^0C for 3 min. 0.05 ml each of serum and phenol standard were added to test and standard test tubes respectively. Mixed well and incubated for 15 min at 37^0C. Thereafter, 1 ml of chromogen reagent was added to all the test tubes. Then, added 0.05 ml of serum to control. Mixed well after addition of each reagent and the O.D of blank, standard, control and test were read against purified water at 510 nm.

Serum alkaline phosphatase activity in KA units was calculated as follows
[(O.D. Test-O.D. Control) / (O.D. Standard- O.D. Blank)] x 10

4. Determination of bilirubin

In toxic liver, bilirubin levels are elevated. Hyperbilirubinemia can result from impaired hepatic uptake of unconjugated bilirubin, such a situation can occur in generalized liver cell injury, certain drugs (e.g Rifampin and probenecid) interfere with the rat uptake of bilirubin by the liver cell and may produce a mild unconjugated hyperbilirubinemia. Bilirubin level rises in diseases of hepatocytes, obstruction to bilirubin excretion into

duodenum, in haemolysis and defects of hepatic uptake and conjugation of Bilirubin pigment such as Gilbert's disease.

Elevation of total serum bilirubin may occur due to:

1.Excessive haemolysis or destruction of the red blood cells.Eg:Haemolytic disease of the new born.

2.Liver diseases.Eg.Hepatitis and cirrhosis.

3.Obstruction of the biliary tract.Eg.Gall stones.

The method is based on the reaction of Sulfonilic acid with sodium nitrite to form azobilirubin which has maximum absorbance at 546nm in the aqueous solution. The intensity of the color Produced is directly proportional to the amount of direct or total bilurubin concentration present in the sample.

Reagents

1. Diazo A-(Reagent-R1) :Ready to use

2. Diazo B-(Reagent-R2):Ready to use

3. Bilirubin Activater :Ready to use

Procedure

Kind & King's method was followed for the estimation of Bilirubin. Five hundred µl of working reagent was added to 50 µl of rat serum & incubated for 5 min at 37°C. Absorbance was measured AT 546 NM in semi auto analyzer against the standard.

The Bilirubin content was calculated using the following equation:

Total bilirubin (mg/dt) = Abs of the sample blank x 15.

Direct Bilirubin(mg/dt) = Abs of sample blank x 10.

5. ESTIMATION OF UREA

Urea is the nitrogen-containing end product of protein catabolism. States associated with elevated levels of urea in blood are referred to as hyper uremia or azotemia.

Method

Estimation of urea was done by Urease-GLDH: enzymatic UV test.

Principle

$$Urea + 2H_2O \xrightarrow{Urease} 2NH_4 + 2HCO_3$$

$$2\text{- Oxoglutarate} + NH_4^+ + NADH \xrightarrow{GLDH} \text{L- Glutamate} + NAD^+ + H_2O$$

Table 14. Reagents

R 1	TRIS pH 7.8	120 mmol/l
	2-Oxoglutarate	7 mmol/l
	ADP	0.6 mmol/l
	Urease	≥ 6 KU/l
	GLDH	≥ 1 KU/l
R 2	NADH	0.25 mmol
R 3	Standard	40 mg/dl

Procedure

a. Take 1000 µl of reagent-1 and 250 µl of reagent-2 in 5 ml test tube.
b. To this, add 10 µl of serum.
c. Mix well and immediately read the test sample at 340 nm Hg 334 nm Hg 365 nm optical path 1 cm against reagent blank (2-point kinetic).
d. And note down the value.

Normal range: 10 – 50 mg/dl.

6. ESTIMATION OF URIC ACID

Uric acid and its salts are end products of the purine metabolism. In gout the most common complication of hyperuricemia, ie. Increased serum levels of uric acid lead to formation of monosodium urate crystal around the joints.

Method

Enzymatic photometric test using TOOS (N ethyl- N (hydroxyl -3- sulfopropyl)-m- toluidin)

Principle

Uric acid + H_2O + O_2 $\xrightarrow{\text{uricase}}$ Allantoin +CO_2 +H_2O_2

TOOS + 4 aminoantipyrine + $2H_2O_2$ $\xrightarrow{POD}$ Indamine + $3H_2O$

Table 15.reagents

R1	Phosphate buffer pH 7.0	100mmol/l
	TOOS	1mmol/l
	Ascorbate oxidase	≥1 KU/l
R2	Phosphate buffer pH 7.0	100mmol/l
	4- amino antipyrine	0.3mmol/l
	K_4 (Fe(CN)$_6$)	10µmol/l
	Peroxidase	≥1KU/l
	Uricase	≥50U/l

Procedure

a. Take 800µl of reagents -1 in a2ml centrifuge tube.
b. To this add 20µl of serum.
c. Mix well and incubate at 30°c for 5 minutes.
d. Then add 200µl of reagent2
e. Mix well incubate for 5min at 37°c
f. Measure the not down the values.

Normal range: 1.9-8.2mg/dl

7. ESTIMATION OF CREATININE:

Principle:

Creatinine forms a coloured complex with picrate in alkaline medium.

The rate of formation of the complex is measured.

Reagents:

Reagent 1 Standard Creatinine (2mg/100ml)

Reagent 2 Picric acid solution.

Reagent 3 sodium hydroxide solution

Procedure:

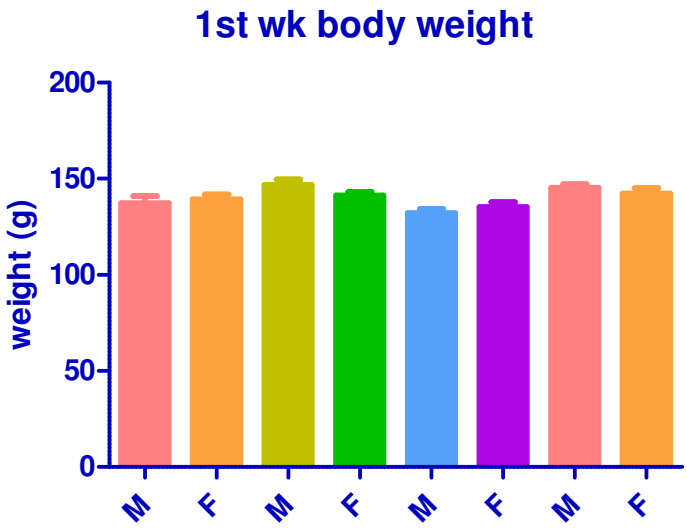
Take 500 µl of reagent -2 and 500 µl of reagent -3 in a 5ml test tube. To this add 100 µl of serum. Mix well and immediately read the test sample at Hg 492 nm 1cm light path and note down the values.

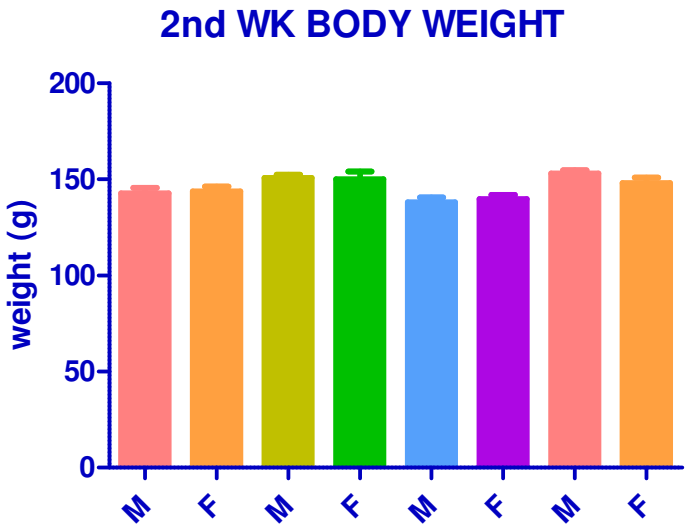
Normal range is 0.6 -1.1 mg/dl.

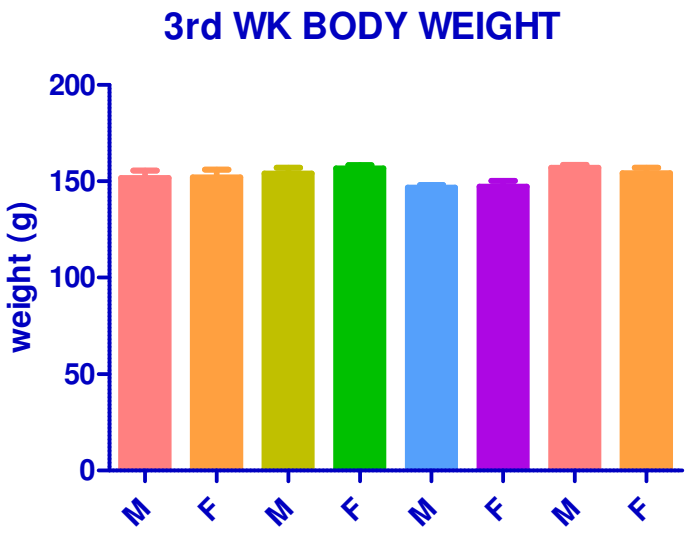
TABLE:1EFFECT OF SUB-ACUTE DOSES (28 DAYS) OF PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY ON BODY WEIGHT IN Gram (PHYSICAL PARAMETER)

GPs	Control		Low Dose		Middle Dose		High Dose	
	Male	Female	Male	Female	Male	Female	Male	Female
1st wk	137.3±3.528	139.3±2.404	146.7±2.906	141.3±1.764	132±2.309	135.3±2.404	145.3±1.764	142.3±2.728
2nd wk	142.7±2.906	143.7±2.603	150.7±1.764	150±4.163	138±2.646	139.7±2.186	153±1.732	148±2.887
3rd wk	151.7±3.844	152±4	154±3.055	156.7±1.764	146.7±1.453	147.3±2.963	157±1.528	154.3±2.728
4th wk	162±2.082	162.7±3.528	163.3±3.48	166.3±0.8819	157.7±0.8819	158.7±2.603	166±2.082	162±2.646

Values are expressed as the mean ± S.D


1st wk body weight
weight (g)
200
150
100
50
0
M
F
M
F
M
F
M
F


2nd WK BODY WEIGHT
weight (g)
200
150
100
50
0
M
F
M
F
M
F
M
F


3rd WK BODY WEIGHT
weight (g)
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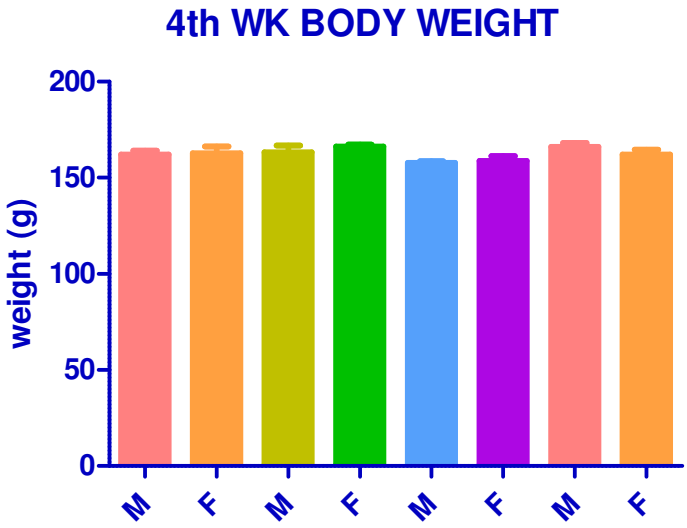
150
100
50
0
M
F
M
F
M
F
M
F


4th WK BODY WEIGHT
weight (g)
200
150
100
50
0
M
F
M
F
M
F
M
F

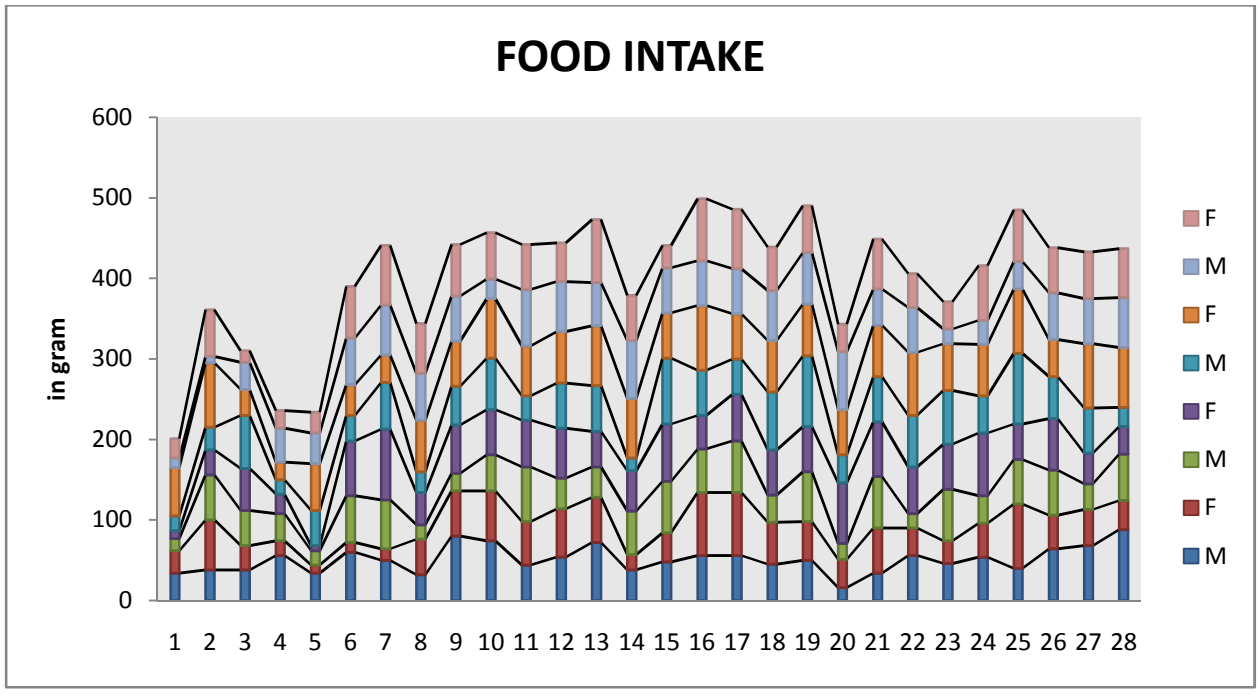
EFFECT OF SUB-ACUTE DOSES (28 DAYS) OF PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY ON FOOD INTAKEIn Gram

Effect Of Sub Acute Doses (28 Days) 0fPANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYONFOOD INTAKE IN Gram

Groups	Control		Low Dose		Middle Dose		High Dose	
DAY	Male	Female	Male	Female	Male	Female	Male	Female
Day 1	34	28	15	10	18	60	12	24
DAY2	38	62	56	31	28	80	8	58
DAY3	38	30	44	52	66	32	34	14
Day 4	56	18	34	24	18	22	42	22
DAY5	34	10	18	6	44	58	38	26
Day 6	60	12	58	68	32	38	58	64
DAY7	50	14	61	88	58	34	62	74
DAY8	32	44	18	40	26	64	58	62
Day 9	80	56	22	60	48	56	56	64
DAY10	74	62	45	56	64	74	24	58
Day 11	44	54	68	58	30	62	70	56
DAY12	54	60	38	62	56	64	62	48
DAY13	72	56	38	44	57	74	54	78
Day 14	38	19	54	50	16	74	72	56
DAY15	48	36	64	71	82	56	56	28
Day 16	56	78	54	42	56	80	56	77

DAY17	56	78	64	58	44	56	56	74
DAY18	45	52	34	56	72	64	62	54
Day 19	50	48	62	56	88	64	64	58
DAY20	16	35	20	75	35	56	72	34
DAY21	34	56	64	68	56	64	45	62
Day 22	56	34	18	58	64	78	56	42
DAY23	46	28	64	56	67	58	18	34
DAY24	54	42	34	78	46	64	30	68
Day 25	40	80	55	44	88	80	34	64
DAY26	64	42	56	64	52	46	58	56
DAY27	68	45	32	38	56	80	56	58
DAY28	88	36	58	34	24	74	62	61

Values are expressed as the mean ± S.D



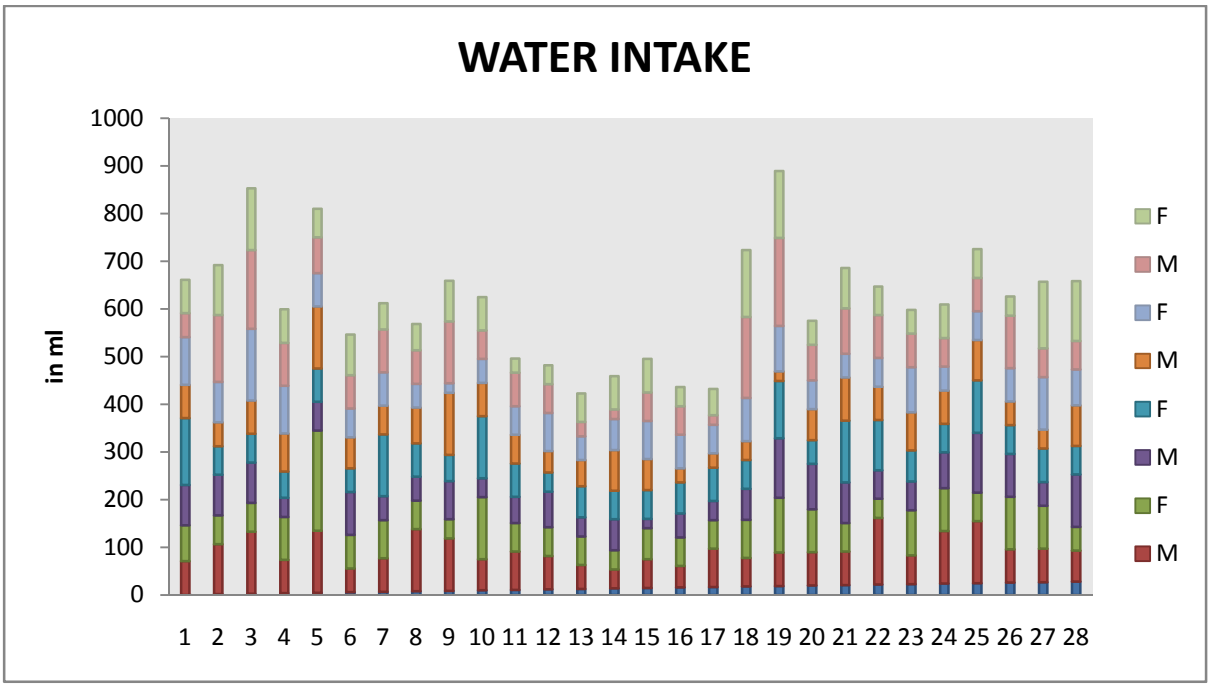
EFFECT OF SUB-ACUTE DOSES (28 DAYS) OF PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY ON WATER INTAKE IN ml

Effect Of Sub Acute Doses (28 Day) 0f PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYonWater Intake in ml

Groups	Control		Low Dose		Middle Dose		High Dose	
DAY	Male	Female	Male	Female	Male	Female	Male	Female
Day 1	70	75	85	140	70	100	50	70
DAY2	105	60	85	60	50	85	140	105
DAY3	130	60	85	60	70	150	165	130
Day 4	70	90	40	55	80	100	90	70
DAY5	130	210	60	70	130	70	75	60
Day 6	50	70	90	50	65	60	70	85
DAY7	70	80	50	130	60	70	90	55

DAY8	130	60	50	70	75	50	70	55
Day 9	110	40	80	55	130	20	130	85
DAY10	65	130	40	130	70	50	60	70
Day 11	80	60	55	70	60	60	70	30
DAY12	70	60	75	40	45	80	60	40
DAY13	50	60	40	65	55	50	30	60
Day 14	40	40	65	60	85	65	20	70
DAY15	60	65	20	60	65	80	60	70
Day 16	45	60	50	65	30	70	60	40
DAY17	80	60	40	70	30	60	20	55
DAY18	60	80	65	60	40	90	170	140
Day 19	70	115	125	120	20	95	185	140
DAY20	70	90	95	50	65	60	75	50
DAY21	70	60	85	130	90	50	95	85
Day 22	140	40	60	105	70	60	90	60
DAY23	60	95	60	65	80	95	70	50
DAY24	110	90	75	60	70	50	60	70
Day 25	130	60	125	110	85	60	70	60
DAY26	70	110	90	60	50	70	110	40
DAY27	70	90	50	70	40	110	60	140
DAY28	65	50	110	60	85	75	60	125

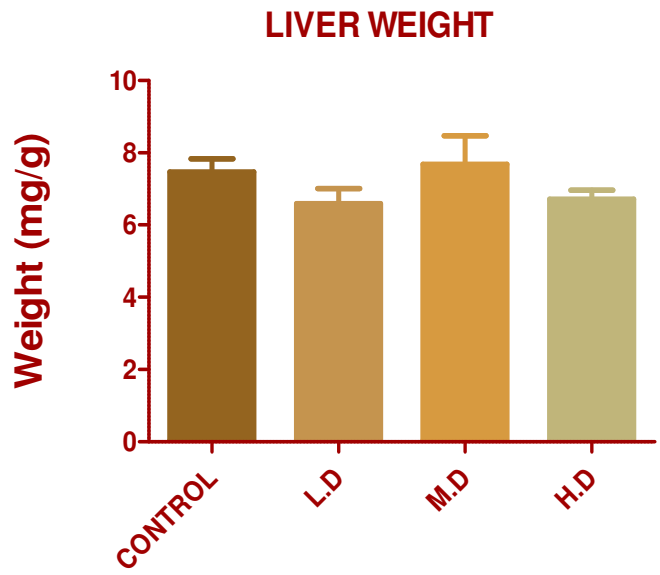
Values are expressed as the mean ± S.D

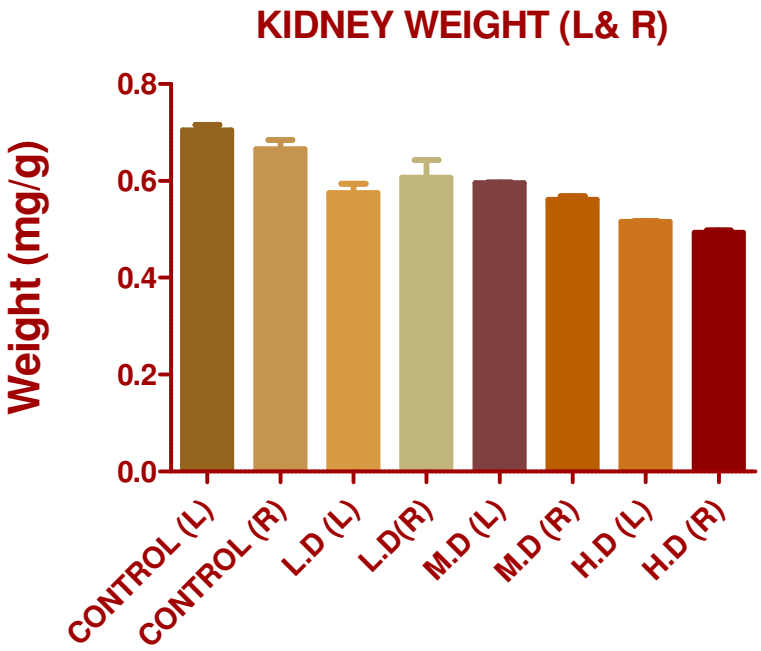


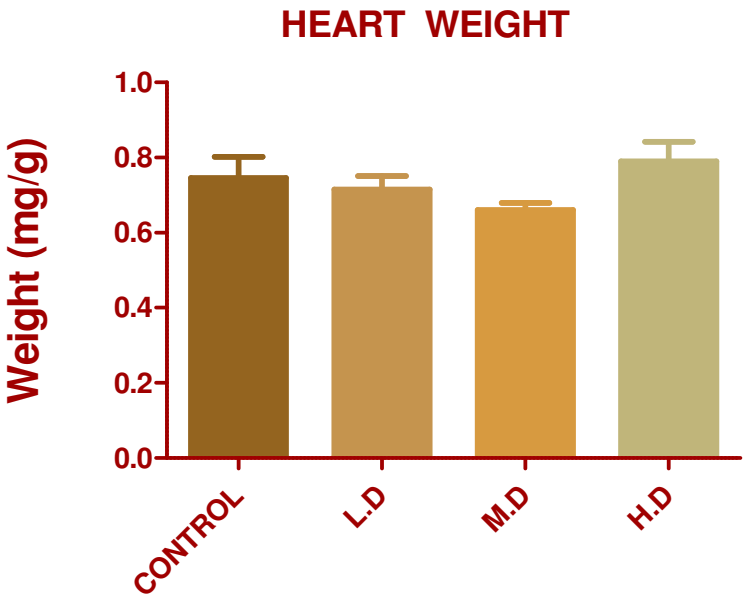
EFFECT OF SUB-ACUTE DOSES (28 DAYS) OF PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYON ORGAN WEIGHT in gm

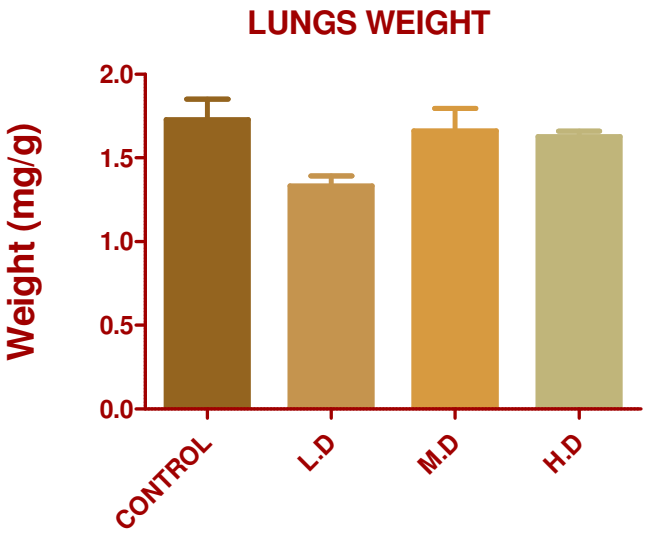
GROUP		CONTROL	Low Dose	Middle Dose	High Dose
LIVER WEIGHT		7.472±0.356	6.59±0.415^{ns}	7.678±0.788^{ns}	6.721±0.241^{ns}
KIDNEY WEIGHT	L	0.704±0.0114	0.574±0.019**	0.596±0.00145*	0.515±0.0018***
	R	0.666±0.0180	0.607±0.0354	0.560±0.0078**	0.493±0.0043***
HEART WEIGHT		0.745±0.0565	0.715±0.0343	0.660±0.0190	0.79±0.0517
LUNGS WEIGHT		1.728±0.122^{ns}	1.33±0.0596^{ns}	1.663±0.1328^{ns}	1.627±0.03301^{ns}
TESTIS WEIGH		2.357±0.01615	2.281±0.07202	1.739±0.1249*	1.89±0.179
		0.6793±0.0594	0.605±0.04431	0.5553±0.06623	0.5967±0.03567

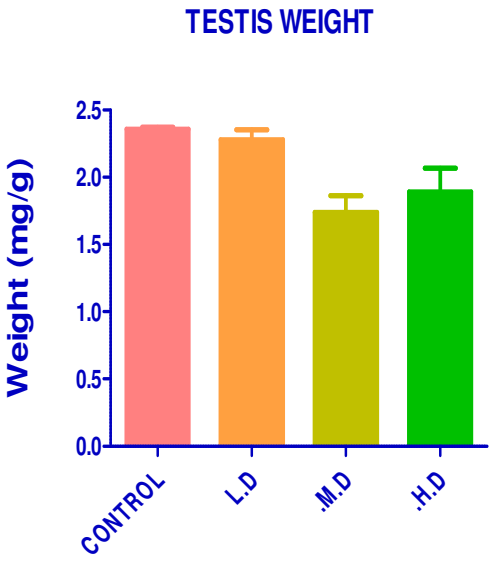
Values arae expressed as mean ± SEM Statisticalsignificance (p) calculated by one way ANOVA followed by dunnett's (n=6); $^{ns}p>0.05$, *p<0.05, **p<0.01, ***p<0.001, calculated by comparing treated groupswith control group.






HEART WEIGHT
Weight (mg/g)
1.0
0.8
0.6
0.4
0.2
0.0
CONTROL
L.D
M.D
H.D


LUNGS WEIGHT
Weight (mg/g)
2.0
1.5
1.0
0.5
0.0
CONTROL
L.D
M.D
H.D


TESTIS WEIGHT
Weight (mg/g)
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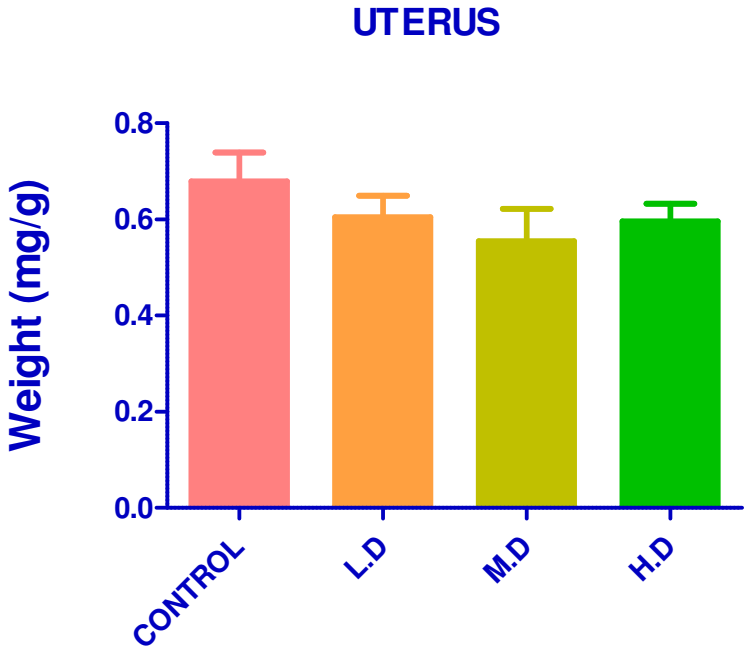
2.0
1.5
1.0
0.5
0.0
CONTROL
L.D
.M.D
.H.D

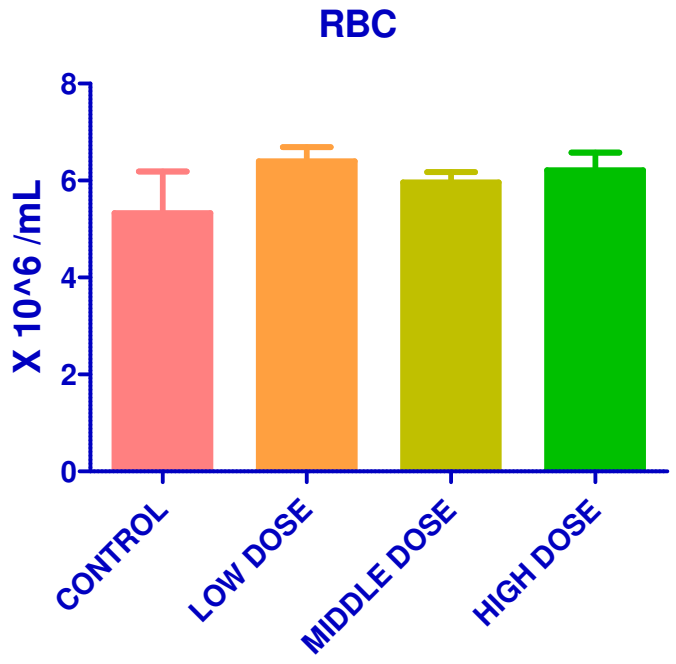


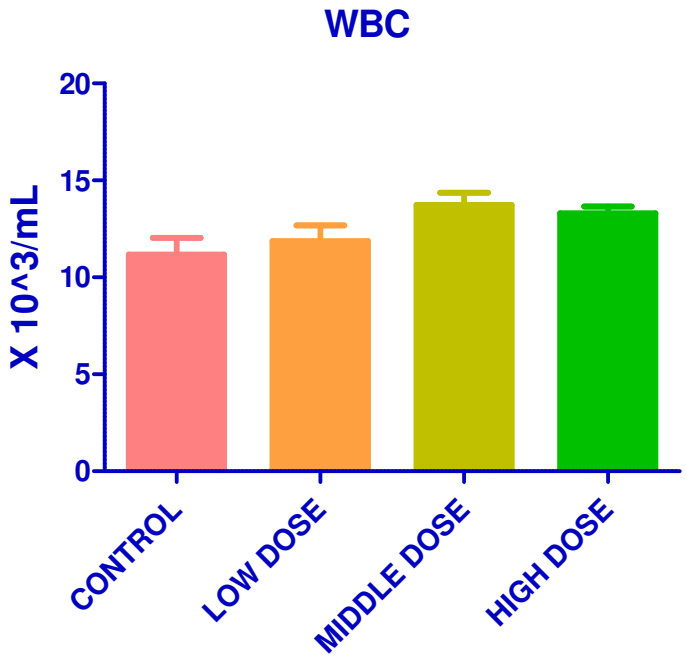
EFFECT OF SUB ACUTE DOSES (28 DAY) 0FPANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYON HAEMATOLOGICALPARAMETERS

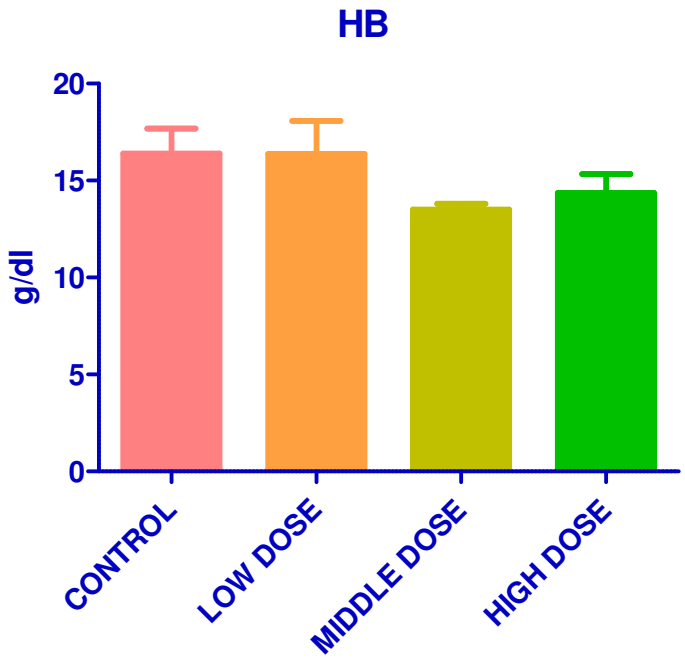
Effect Of Sub Acute Doses (28 Day) 0fPANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYOn Haematological Parameters

Groups	Control	Low Dose	Middle Dose	High Dose
Rbc ($X10^3$/µl)	5.33±0.8585	6.403±0.289	5.96±0.2173	6.213±0.3619
Wbc($X10^6$/µl)	11.17±0.8762	11.87±0.8212	13.73±0.636	13.3±0.3606
Hb (g/dl)	16.4±1.29	16.37±1.707	13.5±0.3055	14.37±0.977

Values are expressed as the mean ± S.D; Statistical significance (p)calculated by one way ANOVA followed by dunnett's ns- no significant $^{*}P< 0.001$, $^{**}P < 0.01$, $^{***}P < 0.05$ calculate by comparing treated group with CONTROL group.


RBC
X 10^6 /mL
8
6
4
2
0
CONTROL
LOW DOSE
MIDDLE DOSE
HIGH DOSE

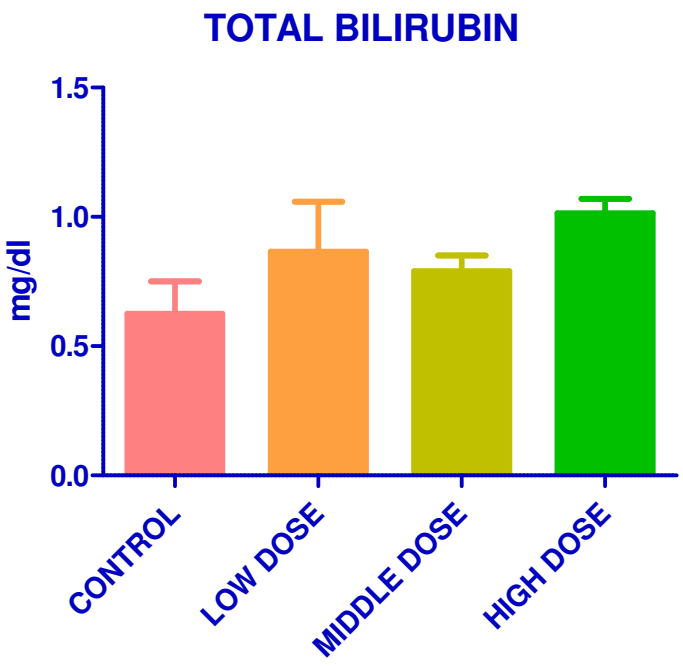

WBC
X 10^3/mL
20
15
10
5
0
CONTROL
LOW DOSE
MIDDLE DOSE
HIGH DOSE



EFFECT OF SUB ACUTE DOSES (28 DAY) 0FPANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYON BIOCHEMICAL PARAMETER (LIVER PROFILE)

Groups	Control	Low Dose	Middle Dose	High Dose
Total Bilirubin(mg/dl)	0.625±0.125	0.865±0.195	0.79±0.06	1.015±0.055

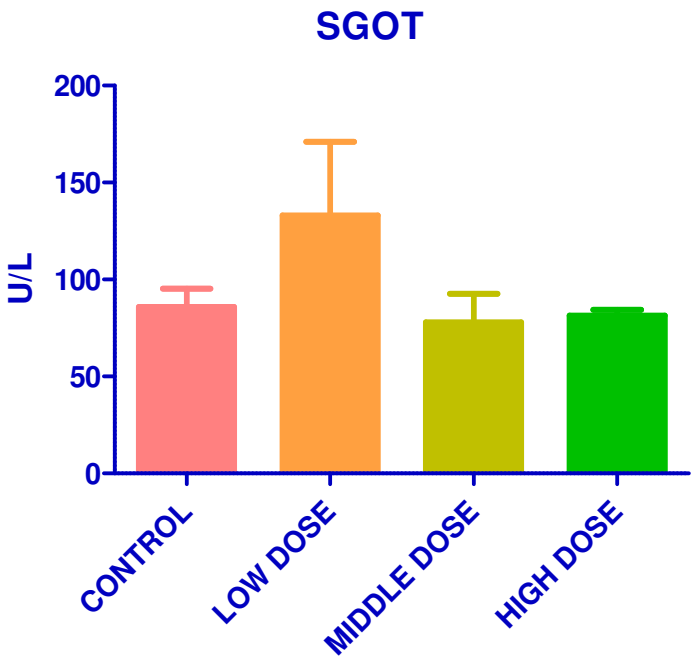
Values are expressed as the mean ± S.D; Statistical significance (p)calculated by one way ANOVA followed by dunnett's ns- no significant $^{*}P< 0.001$, $^{**}P < 0.01$, $^{***}P < 0.05$ calculate by comparing treated group with CONTROL group.

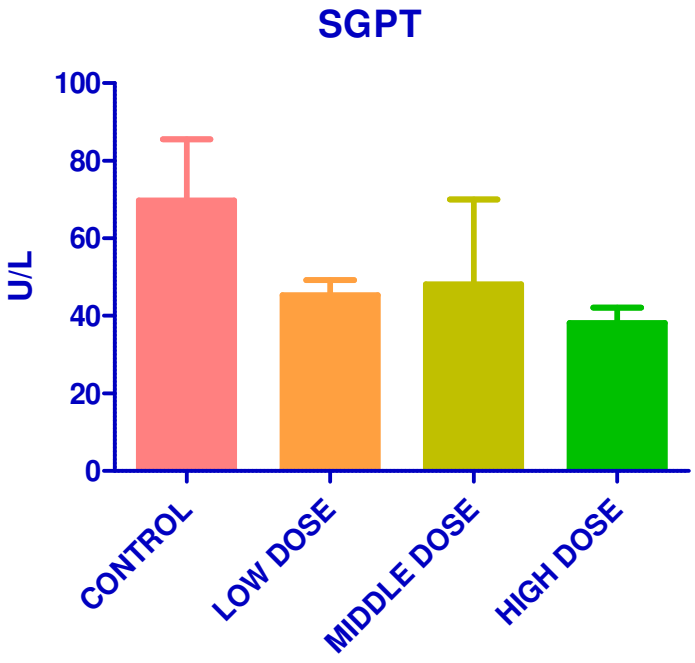


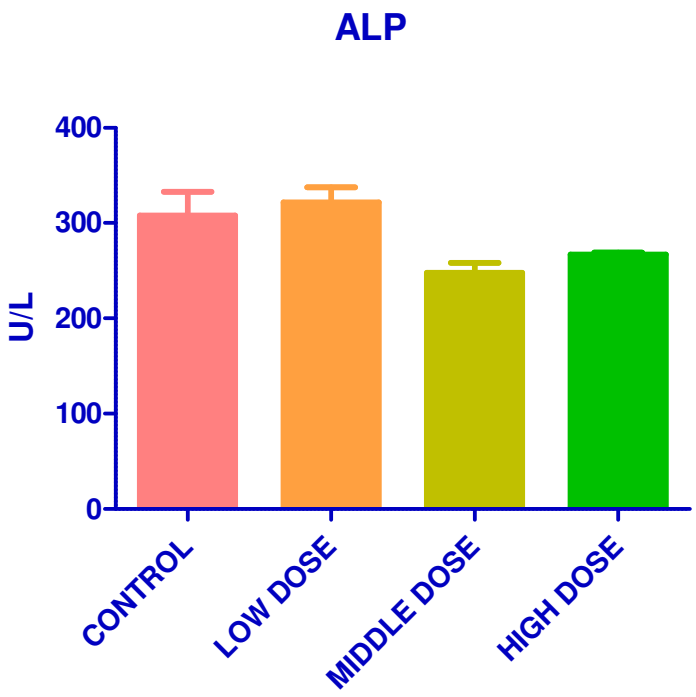
EFFECT OF SUB ACUTE DOSES (28 DAY) 0FPANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYON BIOCHEMICAL PARAMETER (LIVER PROFILE)

Groups	Control	Low Dose	Middle Dose	High Dose
SGOT (U/L)	85.95±9.25	133.2±37.95	77.9±14.9	81.35±3.05
SGPT (U/L)	69.79±15.72	45.4±3.8	48.15±21.85	38.15±3.95
ALP (U/L)	308.2±24.55	321.8±15.75	247.8±10.55	267.3±1.9

Values are expressed as the mean ± S.D; Statistical significance (p)calculated by one way ANOVA followed by dunnett's ns- no significant $^{*}P< 0.001$, $^{**}P < 0.01$, $^{***}P < 0.05$ calculate by comparing treated group with CONTROL group.


SGOT
200
150
100
50
0
U/L
CONTROL
LOW DOSE
MIDDLE DOSE
HIGH DOSE


SGPT
100
80
60
40
20
0
U/L
CONTROL
LOW DOSE
MIDDLE DOSE
HIGH DOSE

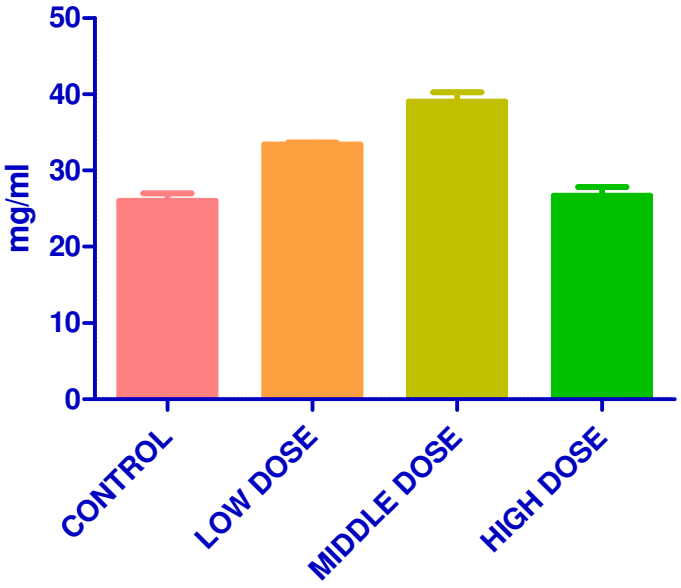


EFFECT OF SUB ACUTE DOSES (28 DAY) 0FPANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYON BIOCHEMICAL PARAMETER (KIDNEY PROFILE)

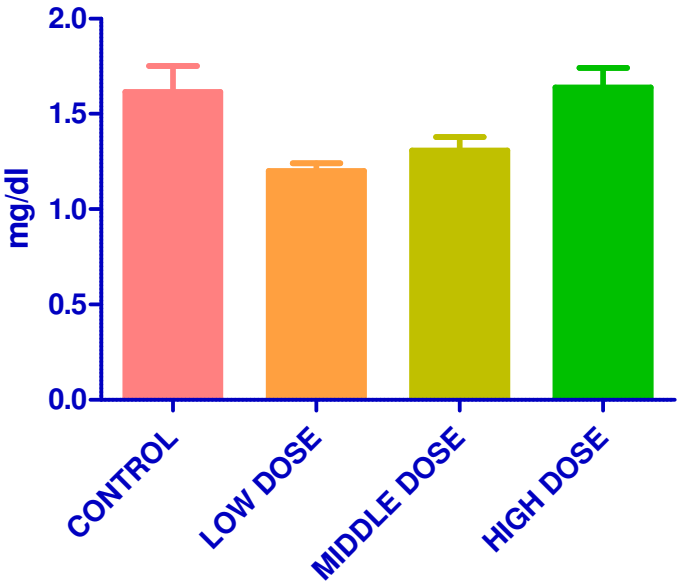
Groups	Control	Low Dose	Middle Dose	High Dose
Urea (mg/dl)	26.03±1.01	33.45±0.25	39.08±1.18	26.74±1.13
Uric acid (mg/dl)	1.615±0.135	1.2±0.04	1.31±0.07	1.64±0.1
Creatinine (mg/dl)	0.33±0.05	0.275±0.005	0.23±0.02	0.29±0.09

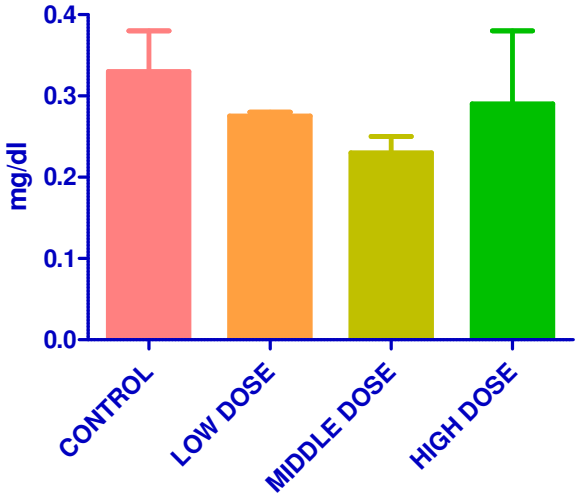
Values are expressed as the mean ± S.D; Statistical significance (p)calculated by one way ANOVA followed by dunnett's ns- no significant $^{*}P< 0.001$, $^{**}P < 0.01$, $^{***}P < 0.05$ calculate by comparing treated group with CONTROL group.

UREA



URIC ACID

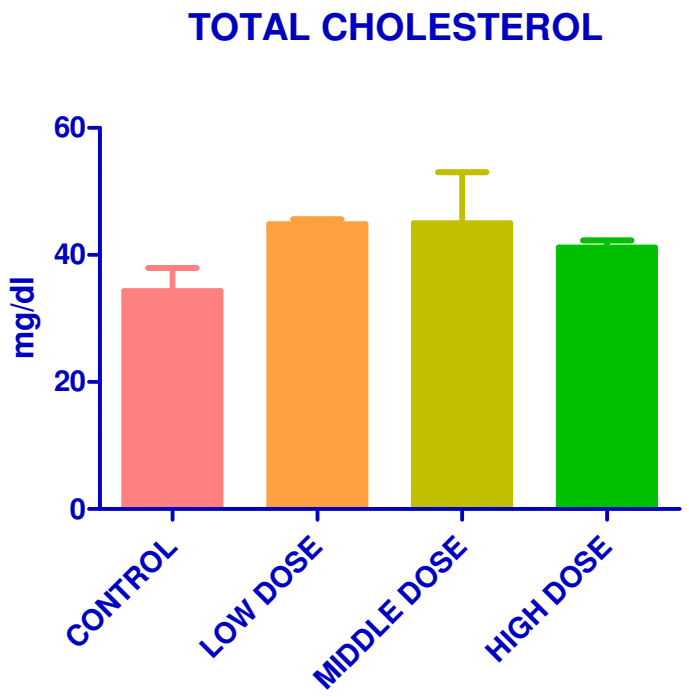


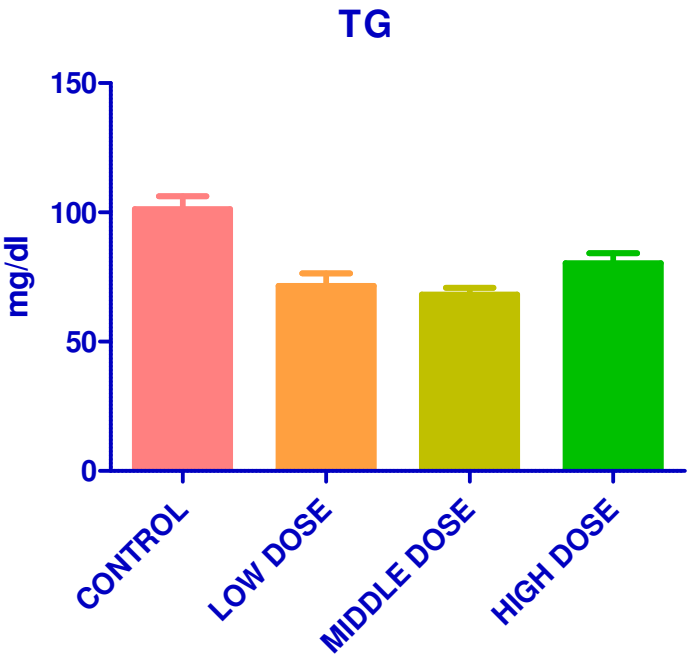


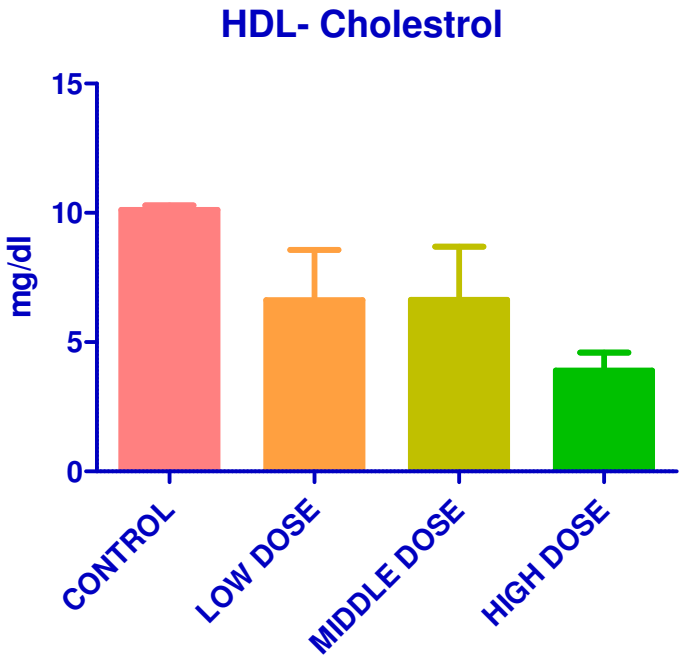
EFFECT OF SUB ACUTE DOSES (28 DAY) 0FPANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEYON BIOCHEMICAL PARAMETER (LIPID PROFILE)

Groups	Control	Low Dose	Middle Dose	High Dose
Total cholesterol (mg/dl)	34.3±3.6	44.85±0.75	44.95±8.05	41.2±1.1
Triglycerides (mg/dl)	101.3±5	71.55±4.85	68.28±2.48	80.4±3.8
HDL-Cholesterol (mg/dl)	10.12±0.185	6.625±1.945	6.65±2.05	3.9±0.7

Values are expressed as the mean ± S.D; Statistical significance (p)calculated by one way ANOVA followed by dunnett's ns- no significant $^{*}P< 0.001$, $^{**}P < 0.01$, $^{***}P < 0.05$ calculate by comparing treated group with CONTROL group.


TOTAL CHOLESTEROL
60
40
20
0
mg/dl
CONTROL
LOW DOSE
MIDDLE DOSE
HIGH DOSE


TG
150
100
50
0
mg/dl
CONTROL
LOW DOSE
MIDDLE DOSE
HIGH DOSE



RESULTS:

CLINICAL SIGNS:

All animals in this study were free of toxic clinical signs throughout the dosing period of 28 days.

Mortality:

All animals in control and in all the treated dose groups survived throughout the dosing period of 28 days.

Body weight:

Results of body weight determination of animals Table-1 from control and different dose groups exhibited comparable body weight gain throughout the dosing period of 28 days.

Food consumption:

During dosing and the post-dosing recovery period, the quantity of food consumed by animals from different dose groups was found to be comparable with that by control animals.

Organ Weight:

Group Mean Relative Organ Weights (% of body weight) are recorded in Table No.4 Comparison of organ weights of treated animals with respective control animals on day 29 was found to be comparable similarly.

Hematological investigations:

The results of hematological investigations (Table 4) conducted on day 29 revealed following significant changes in the values of different parameters investigated when compared with those of respective controls; however, the increase or decrease in the values obtained was within normal biological and laboratory limits or the effect was not dose dependent.

Biochemical Investigations:

Results of Biochemical investigations conducted on days 29 and recorded in Table 2 revealed the following significant changes in the values of hepatic serum enzymes studied. When compared with those of respective control. However, the increase or decrease in the values obtained was within normal biological and laboratory limits.

Histopathology:

In histopathological examination, revealed normal architecture in comparison with control and treated animal.

DISCUSSION:

1) All the animals from control and all the treated dose groups up to 500 mg/kg survived throughout the dosing period of 28 days.

2) No signs of toxicity were observed in animals from different dose groups during the dosing period of 28 days.

3) Animals from all the treated dose groups exhibited comparable body weight gain with that of controls throughout the dosing period of 28 days.

4) Food consumption of control and treated animals was found to be comparable throughout the dosing period of 28 days

5) Haematological analysis conducted at the end of the dosing period on day 29, revealed no abnormalities attributable to the treatment.

6) Biochemical analysis conducted at the end of the dosing period on day 29 no abnormalities attributable to the treatment.

7) Organ weight data of animals sacrificed at the end of the dosing period was found to be comparable with that of respective controls.

8) Histopathological examination revealed normal architecture in comparison with control and treated animal.

SUMMARY AND CONCLUSION:

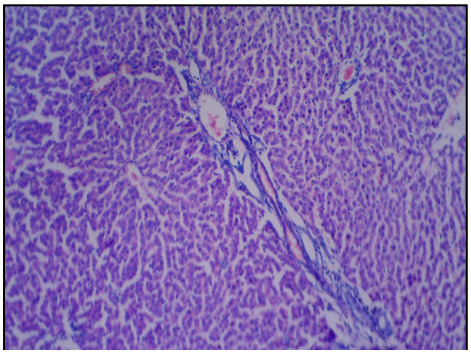
In conclusion**PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**can be considered safe, as it did not cause either any lethality or adverse changes with general behavior of rats and also there were no observable detrimental effects (100 to 300 mg/kg body weight) over a period of 28 days. Our results have demonstrated that the **PANJA LAVANA PARPAM WITH ASAFOETIDA AND HONEY**is relatively safe when administered orally in rats.

9.0 ABBRVIATION

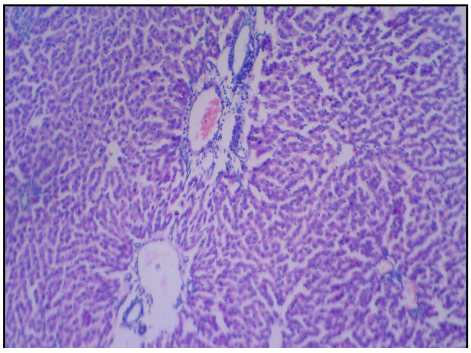
No.	Number
Mg	Milligram
Kg	Kilogram
LD_{50}	Lethal Dose $_{50}$
p.o.	peros
mL	Milliliter
%	percentage
R&D	Research and Development
EDTA	Ethylene Diamine Tetra Acetic Acid
M	Male
g%	Gram percentage
g	Gram
NOAEL	No-Observed-Adverse-Effect-Level
MLD	Minimum Lethal Dose
MTD	Maximum Tolerated Dose
OECD	Organisation of Economic Co-operation and Development
CPCSEA	Committee for the Purpose of Control and Supervision of Experiments on Animals

HISTOPATHOLOGY - TOXICITY STUDY

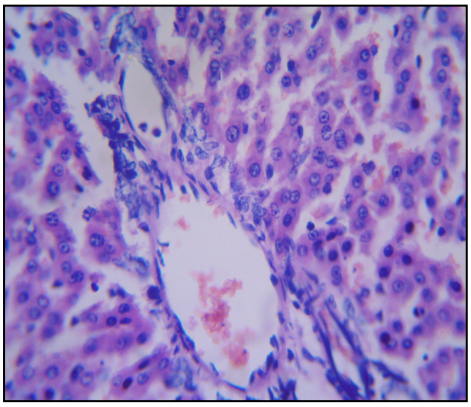
SPECIMEN : A) Liver. Group – : Panja lavana parpam



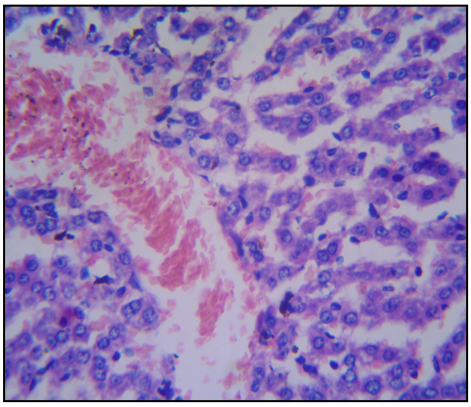
10x shows mild altered architecture with peripotal inflammation



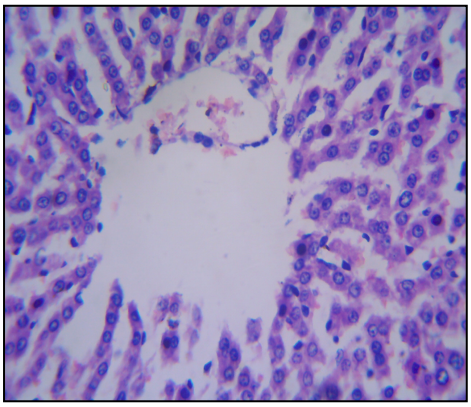
10x shows sinusoidal dilatation



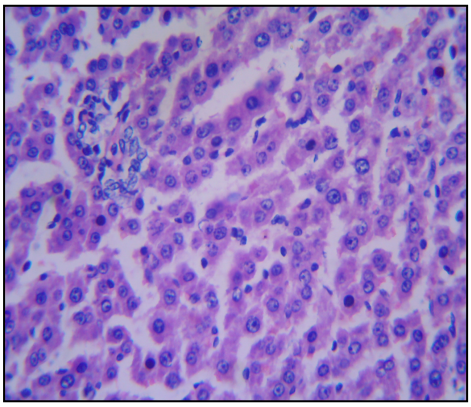
40x shows bile duct hyperplasia



40x shows central vein congestion



40x shows central vein dilated



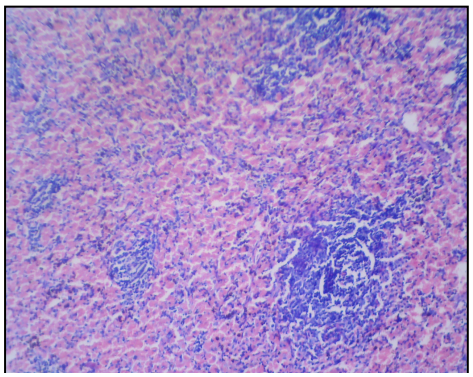
40x shows interface hepatitis

MICROSCOPIC APPEARANCE:

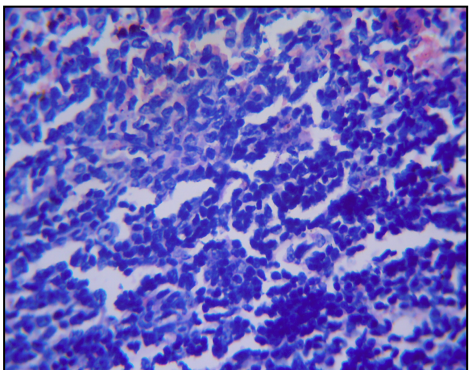
Section from liver shows lobular architecture with interface hepatitis. Individual Hepatocytes shows reactive atypia. Portal triad shows no significant pathology. Central vein and Sinusoids show dilatation.

SPECIMEN : B) spleen.

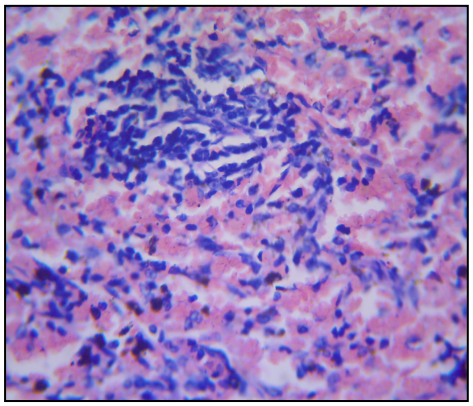
Group – : Panja lavana parpam



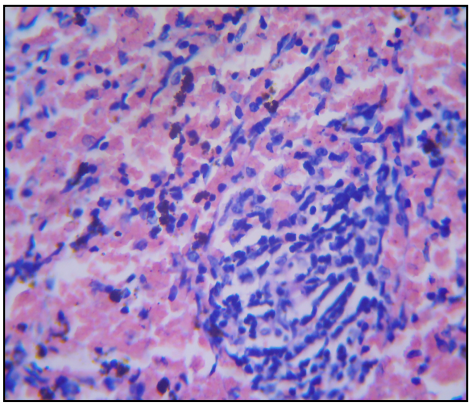
10x shows normal spleen with red and white pulp



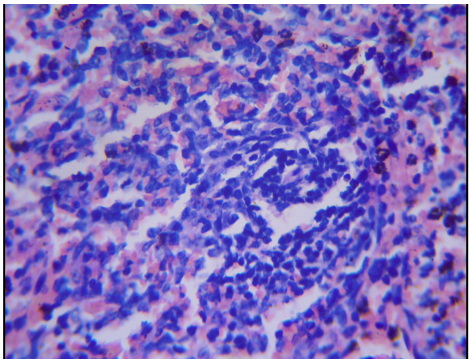
40x show slymphocytic infiltrates



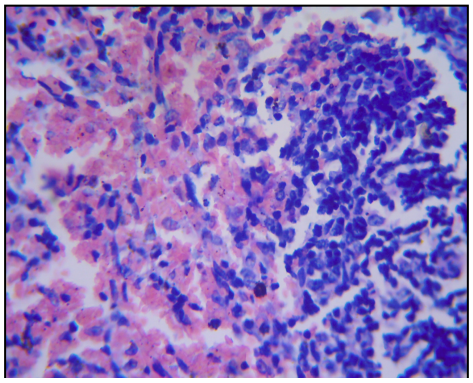
40x shows red pulp shows pigment laden macrophages



40x shows normal red and white pulp



40x shows normal white pulp



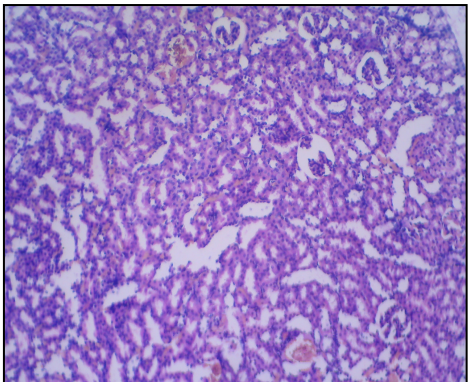
40x shows red and white pulp

MICROSCOPIC APPEARANCE:

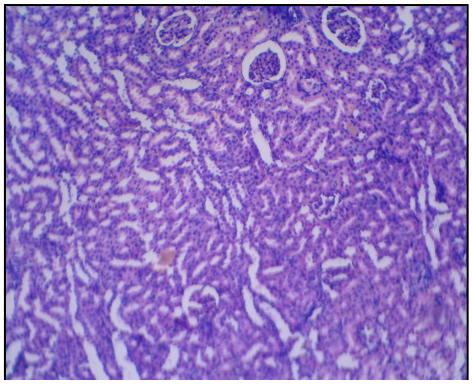
Section studied from spleen shows normal white pulp and red pulp. Red pulp shows pigment laden macrophages and congested vessels. White pulp shows lymphocytic infiltrates forming germinal centre. The pencillar artery shows normal morphology. Megakaryocytes

SPECIMEN : C) Kidney.

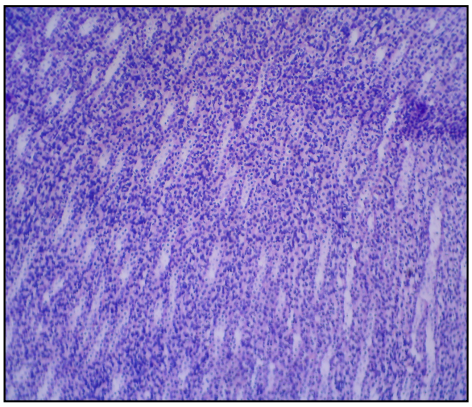
Group – : Panja lavana parpam



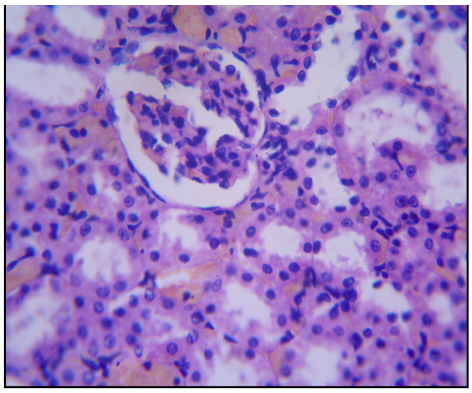
10x shows cortex and medulla



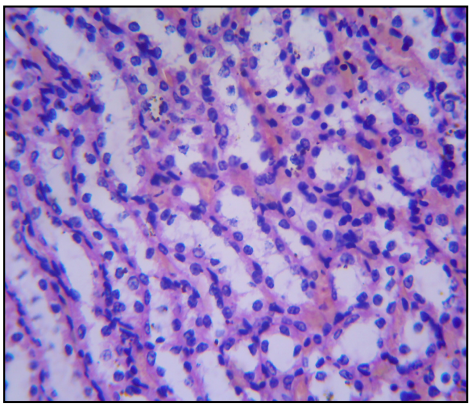
10x shows normal cortex and medulla



10x shows normal interstitium



40x shows normal glomeruli



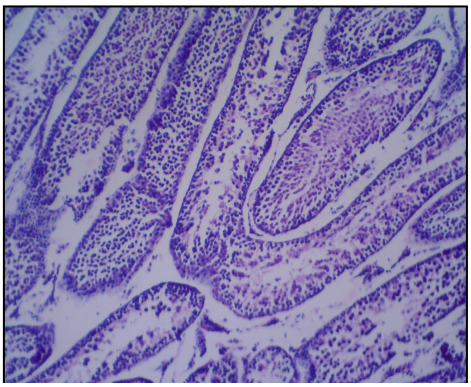
40x shows normal tubules

MICROSCOPIC APPEARANCE:

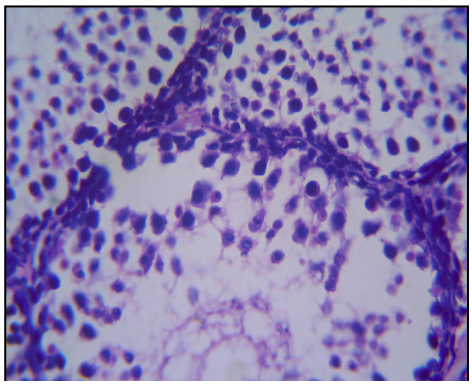
Section from kidney shows both cortex and medulla. Glomeruli and tubules shows no significant pathology. Interstitium shows no significant pathology. Blood vessels show congestion. There is no evidence of toxic changes.

SPECIMEN : D) Testis

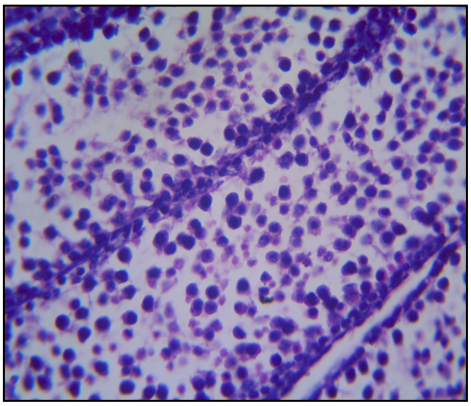
Group – : Panja lavana parpam



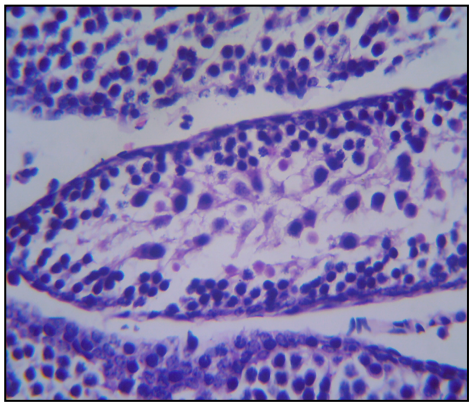
10x shows focal maturation arrest



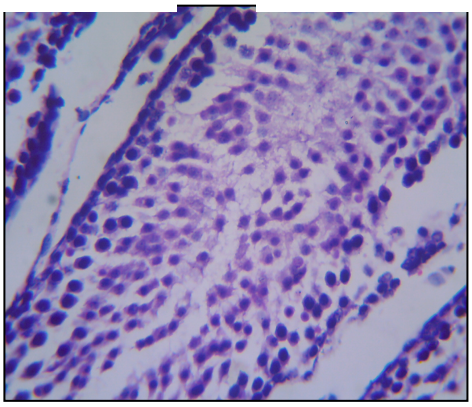
40x shows normal maturation



40x shows spermatogenesis



40x shows tubular spermatogenesis



40x shows tubular maturation arrest

MICROSCOPIC APPEARANCE:

Section from testes with seminiferous tubules showing maturation arrest with lacking of spermatogenesis.

Name :	**Rec.On : 25/03/2018**
Ref. No. : [H0 334A/18]	**Rep.On : 18/04/2018**

HISTOPATHOLOGY

TOXICITY STUDY

SPECIMEN : A) Liver.

Group – : Nasiya banu- P.L.P.

GROSS APPEARANCE:

Received a specimen of liver measuring 3.6x2.5x1.6cms.

(PE): Two bits – One block.

MICROSCOPIC APPEARANCE:

Section from liver shows lobular architecture with interface hepatitis. Individual hepatocytes show no significant pathology. Portal triad shows bile duct hyperplasia. Central vein shows dilated and congestion. Sinusoids show dilatation.

Dr.C.R.Ajeethkumar.M.D. (Path).

Consultant pathologists:

Dr.S.Kalyani.M.D. (Path), Dr. C.R.Ajeeth kumar.M.D. (Path),

Checked

Name :	**Rec.On : 25/03/2018**
Ref. No. : [H0 334B/17]	**Rep.On : 18/04/2018**

HISTOPATHOLOGY

Toxicity study

SPECIMEN : B) spleen.

Group – : Nasiya banu- P.L.P.

GROSS APPEARANCE:

Received a specimen of spleen measuring 2.4x0.8x0.4cms.

(PE): Two bits – One block.

MICROSCOPIC APPEARANCE:

Section studied from spleen shows normal white pulp and red pulp. Red pulp shows pigment laden macrophages and congested vessels. White pulp shows lymphocytic infiltrates forming germinal centre. The pencillar artery shows normal morphology.

Dr.C.R.Ajeeth kumar. M.D. (Path),

Consultant pathologists:

Dr.S.Kalyani.M.D. (Path), Dr. C.R.Ajeeth kumar.M.D. (Path),

Checked

Name :	**Rec.On : 25/03/2018**
Ref. No. : [Ho 334C/18]	**Rep.On : 18/04/2018**

HISTOPATHOLOGY

Toxicity study

SPECIMEN : **C) Kidney**.

Group – : Nasiya banu- P.L.P.

GROSS APPEARANCE :

Received specimen of kidneys each measuring 1.4x0.7x0.5cms and 1.3x0.6x0.4cms.

PE : Two bits – One block.

MICROSCOPIC APPEARANCE:

Section from kidney shows both cortex and medulla. Glomeruli and tubules shows no significant pathology. Interstitium shows no significant pathology. Blood vessels show congestion. There is no evidence of toxic changes.

Dr. C.R.Ajeeth kumar.M.D. (Path).

Consultant pathologists:

Dr.S.Kalyani.M.D. (Path), Dr. C.R.Ajeeth kumar.M.D. (Path),

Checked

Name :	**Rec.On : 25/03/2018**
Ref. No. : [Ho 334D/18]	**Rep.On : 18/04/2018**

HISTOPATHOLOGY

Toxicity study

SPECIMEN : **D) Testis**.

Group – : Nasiya banu- P.L.P.

GROSS APPEARANCE :

Received specimen of both testis measuring each 1.2x0.7x0.5cms and 1.0x0.5x0.4cms.

PE : Two bits – One block.

MICROSCOPIC APPEARANCE:

Section from testes with seminiferous tubules showing normal spermatogenesis. Sertoli cells, leydig cell and interstitium shows normal morphology. No evidence of toxic changes.

Dr. C.R.Ajeeth kumar.M.D. (Path).

Consultant pathologists:

Dr.S.Kalyani.M.D. (Path), Dr. C.R.Ajeeth kumar.M.D. (Path),

ANNEXURE –V

ASSESSMENT FORMS

FORM I **:** Screening and Selection Proforma

FORM I A **:** History Proforma on Enrollment

FORM II : Clinical assessment on enrollment

FORM II A **:** Clinical assessment during and after trial

FORM III : Laboratory Investigation on enrollment and conclusion of trial

FORM IV : Consent Form

FORM IV B : Withdrawal form

FORM IV C : Patient information sheet

FORM IV D : Dietary Advice form

FORM IV E : Adverse Reaction form

FORM IV F : Discharge proforma

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FORM I – SCREENING & SELECTION PROFORMA

1. OP / IP NO : _____
2. NAME : _____
3. RELIGION : H / C / M / O
4. AGE / GENDER : _____
5. OCCUPATION : _____
6. INCOME : _____
7. CONTACT NO : _____
8. INCLUSION CRITERIA :

INCLUSION CRITERIA:

- Age : between 30 -60 years
- Sex : Both
- Joints pain : 1 joint
- Swelling
- Stiffness
- Restricted movements in affected joint.
- Willing for admission and study in IPD for 40 days or willing to attend OPD

EXCLUSION CRITERIA:

- Systemic illness of the Patient
- Rheumatoid arthritis
- Use of narcotic drugs
- Pregnancy and lactation
- History of trauma
- Carcinoma patient
- Tuberculosis
- Immuno compromised patients
- Clinically significant abnormal laboratory values

ADMITTED TO TRIAL:

YES NO

If Yes Serial Number :

Date :

Station:

Signature of the Investigator :

Signature of the Lecturer : **Signature of the HOD**

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FORM I A – HISTORY PROFORMA

1. SL.NO : _____
2. OP / IP NO : _____
3. NAME : _____
4. RELIGION : H / C / M / O
5. AGE / GENDER : _____
6. OCCUPATION : _____
7. INCOME : _____
8. CONTACT NUMBER : _____
9. MARITAL STATUS : Married / Unmarried
10. COMPLAINTS & DURATION :

11. PERSONAL HISTORY:

PERSONAL HABITS	YES	NO	IF YES SPECIFY DURATION
Smoking			
Tobacco Chewing			
Alcohol			
Narcotic Drug Addiction			

12. DRUG HISTORY:

Whether the Patient has underwent any allopathic Treatment

1. Yes 2. No.

If yes specify the nature of the drug and treatment duration _____

13. FAMILY HISTORY:

Whether this problem runs in family?

1. Yes 2. No

If yes, mention the relationship of affected person(s)

1. _____
2. _____

14. DIETARY HABITS :

1. Pure vegetarian ☐
2. Non-Vegetarian ☐

Date :

Station:

Signature of the Investigator :

Signature of the Lecturer : **Signature of the HOD**

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FORM II AND II-A CLINICAL ASSESSMENT ON ENROLLMENT AND ON VISITS

1.	OP / IP No	:
2.	BED No	:
3.	SL. NO	:
4.	NAME	:
5.	AGE	:
6.	GENDER	:
7.	OCCUPATION	:
8.	SOCIAL STATUS	:
9.	DATE OF ADMISSION	:
10.	DATE OF DISCHARGE	:
11.	POSTAL ADDRESS	:
12.	COMPLAINTS & DURATION	:
13.	HISTORY OF PRESENT ILLNESS	:
14.	PAST HISTORY	:
15.	FAMILY HISTORY	:
16.	MENSTRUAL HISTORY (If Applicable):	

17. HABITS:

1. Smoker :
2. Alcoholic :
3. Tobbaco chewer :
4. Betel nut chewer :
5. Non-Vegetarian :
6. Drug addiction :

18. GENERAL EXAMINATION:

1. Body weight (Kg) :
2. Height (Cm) :
3. Body Temperature (F) :
4. Blood Pressure (mmHg) :
5. Pulse Rate (/min) :
6. Heart Rate (/min) :
7. Respiratory Rate (/min) :
8. Pallor :
9. Jaundice :
10. Clubbing :
11. Cyanosis :
12. Pedal Oedema :
13. Lymphadenopathy :
14. Jugular venous pulsation :

19. CLINICAL EXAMINATION:

I. INSPECTION:

1. Attitude :
2. Muscular spasm :
3. Muscle wasting – Proximal :
4. Muscle wasting – Distal :
5. Minor Joint Swelling :
6. Major Joint Swelling :
7. Nodules :
8. Deformity :

II. PALPATION:

1. Swelling :
2. Tenderness :
3. Joint Stiffness :
4. Muscle wasting :
5. Local heat :
6. Local Lymphadenopathy :
7. Pitting Oedema :
8. Nodules :

III. MOVEMENTS:

Restriction of joint movements

1.	Neck	:	Full	Partial
2.	Shoulder	:		
3.	Elbow joint	:		
4.	Knee joint	:		
5.	Ankle joint	:		
6.	Hip joint	:		
7.	Minor joints	:		

IV. PAIN:

1.	Onset :	Sudden	:	Gradual	:	
2.	Early morning stiffness :	Present	:	absent	:	
3.	Nature of pain:	Mild	:	Moderate	:	Severe:
4.	Aggravating factor –Movements		:			
5.	Relieving factor – rest		:			
6.	Stiffness		:			
7.	Tenderness		:			

V. CLINICAL ASSESSMENT :

1. Arthritis of three or more Joints :
2. Arthritis of hand joints :
3. Morning Stiffness :

4. Fever :
5. Anorexia :
6. Anaemia :
7. Spindle appearance of fingers :
8. Restricted movements :
9. Rheumatoid Nodules :
10. Numbness :

20. EXAMINATION OF OTHER SYSTEMS:

1. CVS :
2. RS :
3. CNS :
4. ABDOMEN :
5. GENITO – URINARY :

EXAMINATION – SIDDHA ASPECTS

1. NILAM:

1. Kurinji 2. Mullai 3. Marutham 4. Neithal 5. Paalai

2. KAALAM:

1. Kaar Kaalam 2. Koothir Kaalam 3. Munpani Kaalam
4. Pinpani Kaalam 5. Elavenir Kaalam 6. Mudhuvenir Kaalam

3. YAAKKAI:

1. Vatham	2. Pitham	3. Kabam
4. Vathapitham	5. Pithavatham	6. Kabavatham
7. Vathakabam	8. Pithakabam	9. Kabapitham

4. GUNAM:

1. Sathuvam 2. Rasatham 3. Thamasam

5. KANMENDHIRIUM / KANMAVIDAYAM

1. Kai :
2. Kaal :
3. Vaai :

4. Eruvaai :

5. Karuvaai :

6. UYIR THATHUKKAL:

I. VATHAM:

1. Piraanan :
2. Abaanan :
3. Viyaanan :
4. Uthaanan :
5. Samaanan :
6. Naagan :
7. Koorman :
8. Kirukaran :
9. Devathathan :
10. Dhananjeyan :

II. PITHAM :

1. Analagam :
2. Ranjagam :
3. Saathagam :
4. Aalosagam :
5. Praasagam :

III. KABAM:

1. Avalambagam :
2. Kilethagam :
3. Pothagam :
4. Tharpagam :
5. Santhigam :

7. UDAL THAATHUKKAL:

1. Saaram :
2. Senneer :
3. Oon :

4. Kozhuppu :
5. Enbu :
6. Moolai :
7. Sukkilam / Suronitham:

8. ENVAGAI THERVUGAL:

1. Naadi :
2. Sparisam :
3. Naa :
4. Niram :
5. Mozhi :
6. Vizhi :
7. Malam :

i. Niram: ii. Thanmai: iii. Irugal: iv.Ilagal:

8. Moothiram :

I. NEERKURI:

a. Niram :
b. Manam :
c. Edai :
d. Nurai :
e. Enjal :

II. NEIKURI:

Vatha Neer : Pittha Neer : Kaba Neer :

Date :
Station:
Signature of the Investigator :
Signature of the Lecturer : **Signature of the HOD**

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FORM III – LABORATORY INVESTIGATION

1. BLOOD:
    1. TC : (Cells / Cumm)
    2. DC (%) : N : L : M : E :
    3. ESR (mm) : ½ hr : 1 hr :
    4. Hb :
    5. Blood Sugar : a) Fasting : b) Post Prandial :
    6. Renal function tests:
        Blood Urea: Serum creatinine:
    7. Lipid profile :
        HDL: LDL: VLDL:
        Total Cholesterol : TGL :
    8. Liver Function tests:
        Serum Bilirubin : Total Direct Indirect

SPECIFIC INVESTIGATIONS

RA factor :

ASO titre :

C-Reactive Protein :

SGOT :

SGPT :

Serum albumin & globulin :

Total protein :

II. URINE:

1. Albumin :
2. Sugar :
3. Epithelial cells :
4. Pus cells :
5. Red blood cells :
6. Casts / Crystals :

III. MOTION:

1. Ova :
2. Cyst :
3. Occult blood :
4. Pus cells :

IV. X-RAY FINDINGS

Date :

Station:

Signature of the Investigator :

Signature of the Lecturer : **Signature of the HOD**

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FORM IV A – CONSENT FORM

CERTIFICATE BY INVESTIGATOR

I certify that I have disclosed all the details about the study in the terms readily understood by the patient.

Signature _____

Date _____

Name _____

CONSENT BY PATIENT

I have been informed to my satisfaction, by the attending physician, the purpose of the clinical trial, and the nature of drug treatment and follow-up including the laboratory investigations to be performed to monitor and safeguard my body functions.

I am aware of my right to opt out of the trial at any time during the course of the trial without having to give the reasons for doing so.

I exercising my free power of choice, hereby give my consent to be included as a subject in the clinical trial of "PANJA LAVANA PARPAM" (Internal drug) and "LAHU VATHA KESARI THYLAM" (External drug) for the treatment of "AZHAL KEEL VAYU" (OSTEOARTHRITIS)".

Place :

Date :

Signature :

Name :

Witness Signature:

Name :

அரசினர் சித்த மருத்துவக் கல்லூரி மற்றும் மருத்துவமனை

பாளையங்கோட்டை

பட்டமேற்படிப்பு சிறப்பு மருத்துவத்துறை

"பஞ்சலவண பற்பம்'' மற்றும் "இலகு வாத கேசரி தைலம்'' இவற்றின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்வு ஒப்புதல் படிவம் ஆய்வாளரால் சான்றளிக்கப்பட்டது.

நான் இந்த ஆய்வைக் குறித்த அனைத்து விபரங்களையும் நோயாளிக்கு புரியும் வகையில் எடுத்துரைத்தேன் என உறுதியளிக்கிறேன்.

தேதி : கையொப்பம்:

இடம் : பெயர்:

நோயாளியின் ஒப்புதல்

என்னிடம் இந்த மருத்துவ ஆய்வின் காரணத்தையும் மருந்தின் தன்மை மற்றும் மருத்துவ வழிமுறையைப் பற்றியும் தொடர்ந்து எனது உடல் இயக்கத்தை கண்காணிக்கவும், அதனைப் பாதுகாக்கவும் பயன்படும் மருத்துவ ஆய்வுக்கூட பரிசோதனைகள் பற்றியும் திருப்தி அளிக்கும் வகையில் ஆய்வு மருத்துவரால் விளக்கிக் கூறப்பட்டது.

நான் இந்த மருத்துவ ஆய்வின் போது காரணம் எதுவும் கூறாமல் எப்பொழுது வேண்டுமானாலும் இந்த ஆய்விலிருந்து என்னை விடுவித்துக் கொள்ளும் உரிமையை தெரிந்திருக்கின்றேன்.

நான் என்னுடைய சுதந்திரமாகத் தேர்வு செய்யும் உரிமையைக் கொண்டு **அழல் கீல்வாயு**என்னும் நோய்க்கான **பஞ்சலவண பற்பம்**மற்றும் **"இலகு வாத கேசரி தைலம்''** ஆகியவற்றின் பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்விற்கு என்னை உட்படுத்த ஒப்புதல் அளிக்கிறேன்.

தேதி : கையொப்பம்:

இடம் : பெயர் :

சாட்சிக்காரர் கையொப்பம்:

பெயர் :

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FORM IV – B - WITHDRAWAL FORM

1. SL.NO : _____
2. OP / IP NO : _____
3. NAME : _____
4. RELIGION : H / C / M / O
5. AGE / GENDER : _____
6. OCCUPATION : _____
7. SOCIAL STATUS : _____
8. CONTACT NO : _____
9. DATE OF TRIAL COMMENCEMENT : _____
10. DATE OF WITHDRAWAL FROM TRIAL : _____
11. REASONS FOR WITHDRAWAL : _____

- Long absence at reporting : Yes / No
- Irregular treatment : Yes / No
- Shift of locality : Yes / No
- Increase in severity of symptoms : Yes / No
- Development of severe adverse drug reactions: Yes / No

Date :

Station:

Signature of the Investigator :

Signature of the Lecturer : **Signature of the HOD**

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POST GRADUATE DEPARTMENT

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BRANCH – III (SIRAPPU MARUTHUVAM)

A PILOT STUDY TO EVALUATE THE THERAPEUTIC EFFICACY OF SIDDHA FORMULATION "**PANJA LAVANA PARPAM**" INTERNAL & "**LAHU VATHA KESARI THYLAM**" EXTERNAL IN "**AZHAL KEEL VAYU**" (OSTEOARTHRITIS).

FORM – IV C DRUG COMPLIANCE FORM

Name of the Drug : SIVATHAI CHOORANAM

Drugs issued : (Mg / Gram)

Drugs returned : (Mg / Gram)

S. NO	**DATE**	**DRUG TAKEN TIME**	
		MORNING / TIME	**EVENING / TIME**
Day 1			
Day 2			
Day 3			
Day 4			
Day 5			
Day 6			
Day 7			
Day 13			
Day 14			
Day 15			
Day 16			
Day 17			
Day 18			
Day 19			
Day 25			

Day 26			
Day 27			
Day 28			
Day 29			
Day 30			
Day 31			
Day 37			
Day 38			
Day 39			
Day 40			
Day 41			
Day 42			
Day 43			
Day 44			
Day 45			
Day 46			
Day 47			
Day 48			

Date :

Station:

Signature of the Investigator :

Signature of the Lecturer : **Signature of the HOD**

BIBLIOGRAPHY

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- Theryarkarisal ,Theriyarvagadem
- **Thiruvalluvar**Thirukkural
- Siddha maruthuvangacurukkam

- **Therayar**Neerkuri and Neikuri
- Athmaratchamirtham
- Anubava Vaithiya Deva Ragaisyam
- Gunapadam thathu Jeevam

பஞ்சலவணபற்பம்

குப்பைமேனி

கற்றாழை

முருங்கை

நொச்சி

தழுதாழை

பஞ்சலவணபற்பம்

கல்லுப்பு

கறியுப்பு

இந்துப்பு

வளையலுப்பு

வெடியுப்பு

LAHU VADHA KESARI THYLAM

பெருங்காயம்

கரியபோளம்

நல்வேளை

வெள்ளுள்ளி

நல்லெண்ணைய்

SWELLING OF THE KNEE JOINT

MUSCLE WASTING

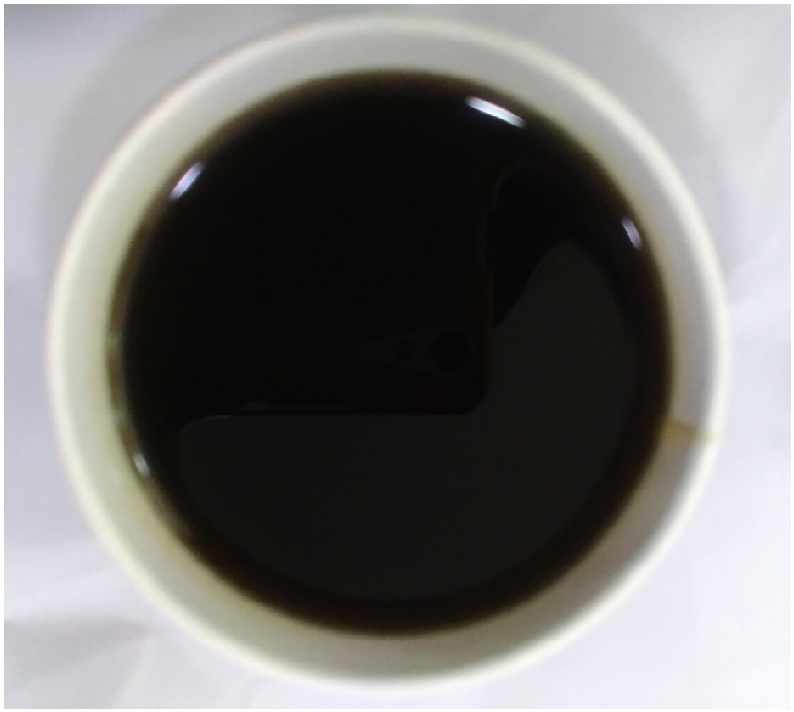
MEASUREMENT OF THE KNEE JOINT

BEFORE TREATMENT

AFTER TREATMENT

PANJA LAVANA PARPAM

LAHU VADHA KESARI THYLAM




KNEE LAT
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MRS.GOWRI 55 YRS 2776-12-17 KNEE AP/LAT 04-12-2017
PARVATHY NURSING HOME.KALAKAD.Dr.C.BASKAR M.S.(ORTHO),D.C.H.,F.NUHS

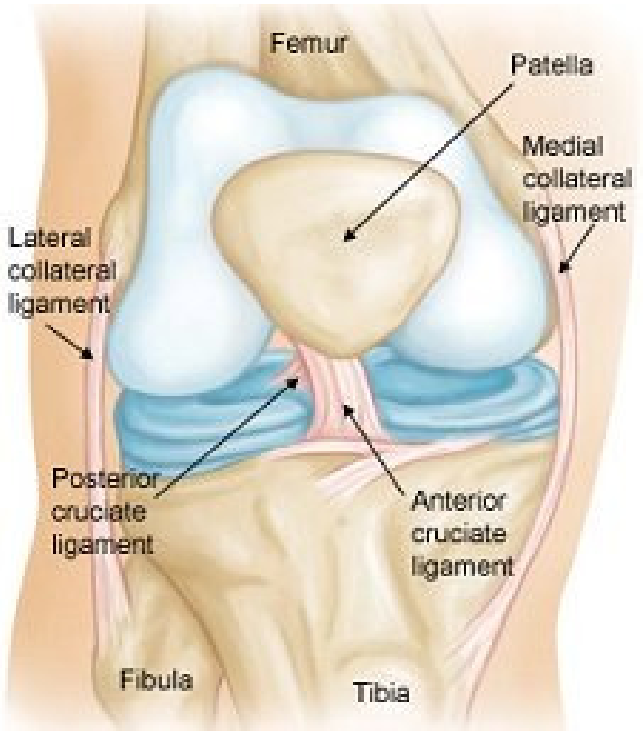
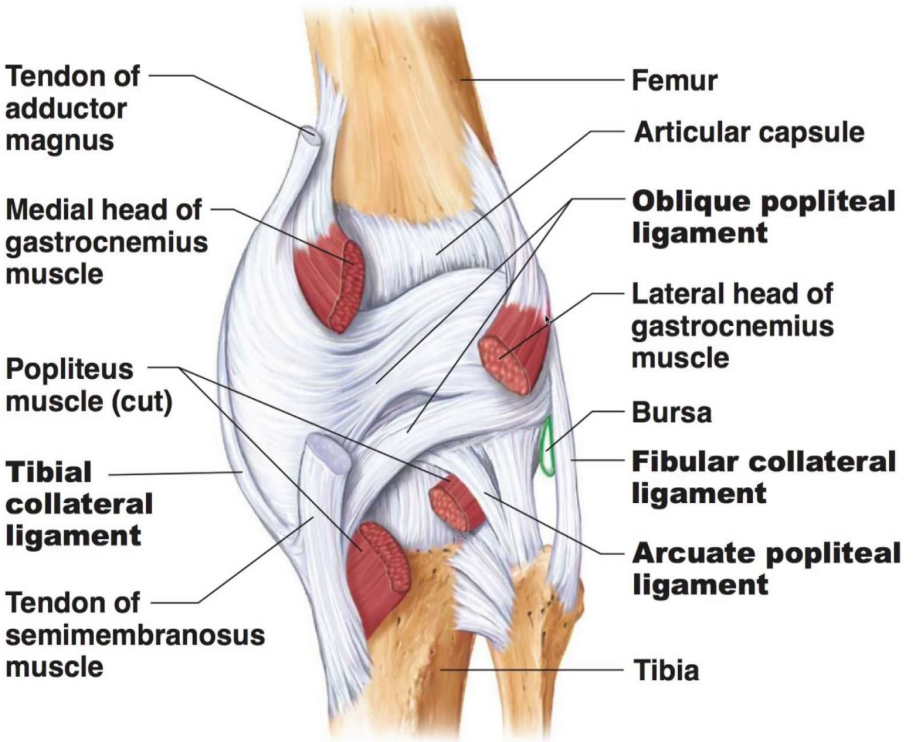
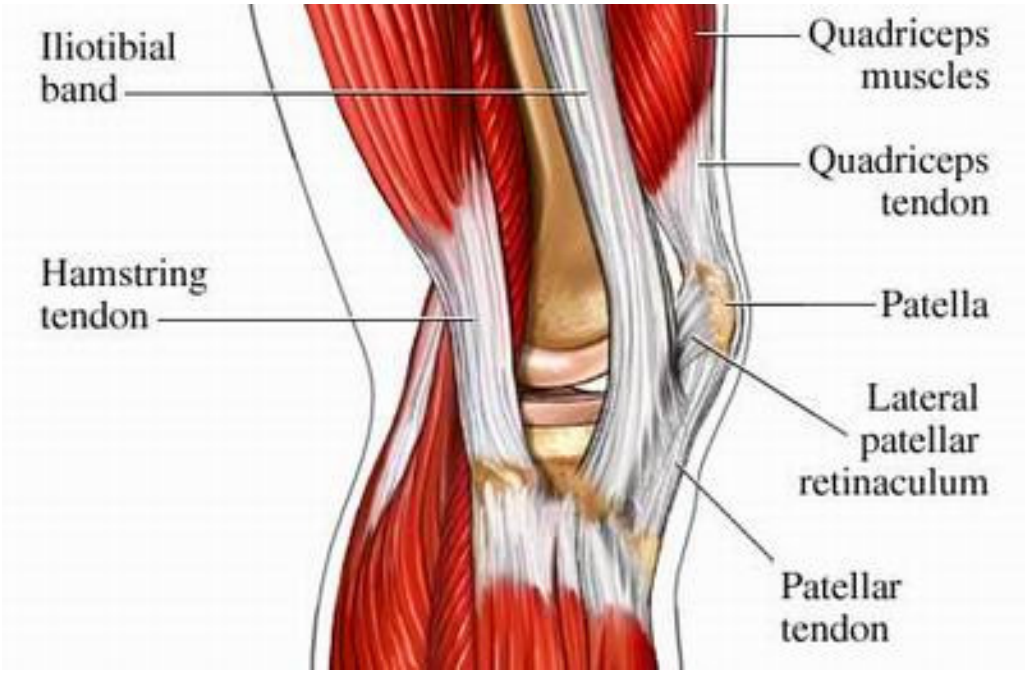


Figure 8.7d The knee joint.



(d) Posterior view of the joint capsule, including ligaments

MUSCLE OF THE KNEE JOINT



MOVEMENT OF THE KNEE JOINT

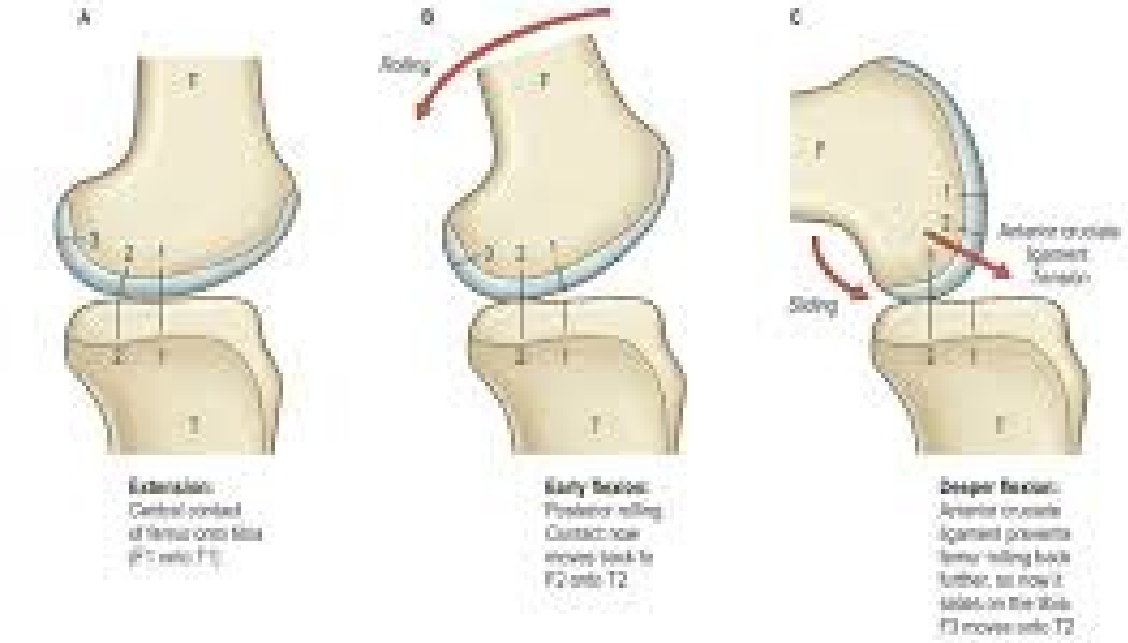
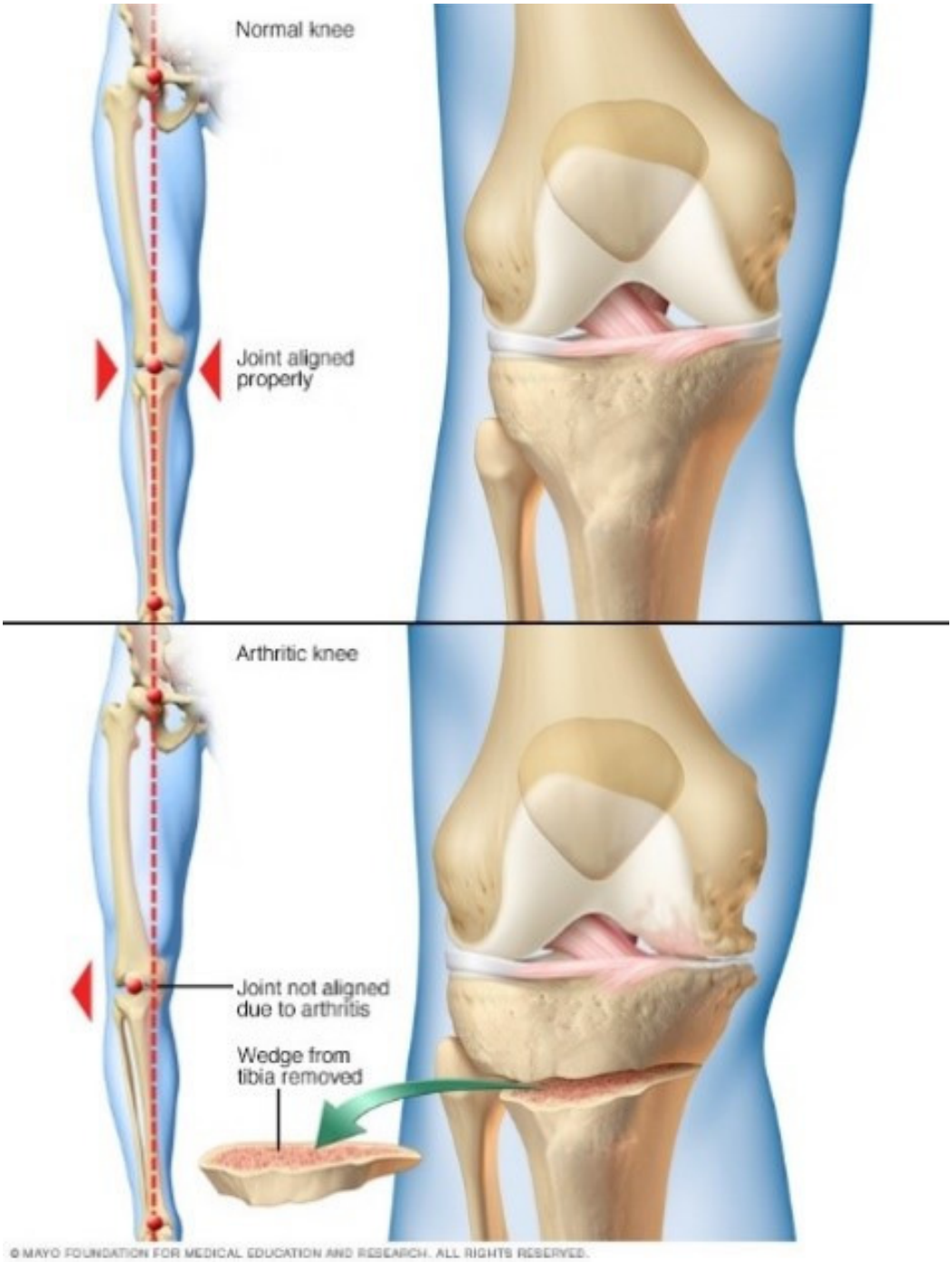


Fig. 8.2.20 Knee joint kinematics during gait: rolling and gliding (flexion, anterior translation).

NORMAL KNEE JOINT



OA KNEE JOINT

தொக்கணம் மற்றும் ஒற்றடம்

SCHEMATIC VIEW OF THE MAIN STRUCTURES OF A HEALTHY (LEFT) AND DEGENERATE OA (RIGHT) JOINT